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05 January 1999

Adrienne La Favre, Ph.D.  
District Representative  
Division of Hazardous Waste Management  
Ohio EPA  
Northeast District Office  
2110 E. Aurora Road  
Twinsburg, Ohio 44087-1969

Re: RMI Titanium Company Sodium Plant  
Ashtabula County  
OHD 000 - 810 - 242

US EPA RECORDS CENTER REGION 5



1009080

Dear Dr. La Favre:

In response to your letter dated 02 October 1998, here are responses to Ohio EPA's comments on the Groundwater Monitoring Plan for the Closed Landfill (Area A) RMI Titanium Company Sodium Plant, Ashtabula, Ohio (November 1997) prepared on our behalf by Eckenfelder Inc.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "Richard L. Mason".

Richard L. Mason  
Director  
Environmental Affairs

Phone: 330/544-7688  
FAX: 330/544-1029

c w enc: T. Matheson, USEPA  
D. Korb, RMI  
J. Gorman, RMI

c w/o enc: J. Pintenich, Eckenfelder



**RESPONSES TO COMMENTS FROM OHIO EPA  
DATED OCTOBER 2, 1998  
ON THE GROUNDWATER MONITORING PLAN  
FOR THE CLOSED LANDFILL (AREA A)  
RMI TITANIUM CO. – SODIUM PLANT  
ASHTABULA, OHIO**

The following responses are provided to address comments received by RMI Titanium Co. from the Ohio Environmental Protection Agency (Ohio EPA). These comments were transmitted as Attachment 3 to a letter dated October 2, 1998 from Adrienne LaFavre of Ohio EPA to Richard Mason of RMI. The comment document included an Introduction, Comments, and a Conclusion. The specific comments provided by the Ohio EPA in the Comments section are addressed in this document in the order they were presented in the letter attachment. RMI Sodium Plant responses (in bold text) immediately follow the associated Ohio EPA comment.

A Groundwater Monitoring Plan for the closed landfill (Area A) at the RMI Sodium Plant (RMI-SP) in Ashtabula, Ohio was developed and submitted to Ohio EPA on November 26, 1997 to address concerns related to sporadic seeps observed within the footprint of Area A. This plan was submitted in response to a request in a letter dated August 26, 1997 from the Ohio EPA. RMI considers that the majority of these seeps result from perched water within a soil cover, which diverts water laterally at the top of the existing clay cap. An additional issue is the seep associated with the area near groundwater monitoring well RMI-3S. This seep is considered to be the result of an elevated water table due to the additional recharge from the previously existing pond and leaky water pipes in the immediate vicinity. During the Ohio EPA review period, the pond was closed by RMI-SP and the pipes were repaired by ASHCO, the water supply company that operates part of its distribution system on a right-of-way adjacent to the landfill. Groundwater elevations in RMI-3S have been periodically monitored by RMI-SP to evaluate the effects of the pond closure and pipe repair.



Specific Ohio EPA comments are addressed as follows.

1. To evaluate the effects of the existing pond located at the east of Area A, the effect of recharge from the water coming out of the leaky water pipe, and the effects of storm events and seasonal variations on the water level elevations in Area A, the facility proposed a ground water monitoring system that consists of two existing shallow monitoring wells (RMI-3S, RMI-4S), five new piezometers (PZ-1 to PZ-5), and five new staff gauges (SG-1 to SG-5).

**Response: This statement is correct. No response is necessary.**

2. The flow directions of shallow ground water at the facility area varies and are apparently controlled by the locations of landfills and by surface topography. Based on the contour maps in Figures 1-2 and 1-3, shallow ground water in Area A flows approximately to the southwest. RMI-3S appears to be located in the upgradient direction. PZ-1, PZ-2, PZ-3, PZ-5, PZ-4, and RMI-4S are progressively located in the downgradient direction.

**Response: Groundwater flow within the water table zone is influenced primarily by discharge to the surface water drainage features, which border the landfill. The surface water pond has been removed and the leaky pipes associated with the water tower have been repaired. Therefore, the previous resulting recharge will no longer influence groundwater flow directions in this area. The locations of the wells and piezometers are positioned to appropriately characterize the water table beneath the landfill.**

3. The facility proposed to install at each piezometer location a one-inch diameter PVC casing and PVC screen down to a depth approximately 12 feet, without indicating the screen length. The facility should indicate the screen length.



**Response:** Though not stated in the groundwater monitoring plan, RMI intends to install each 1-inch piezometer with 5 feet of screen.

4. The facility indicated that with a depth of 12 feet, the bottom of each piezometer will be approximately 2 feet below the water table. The basis of selection of this piezometer depth is not discussed in the plan. According to the data from RMI-3S, under the present condition the water table elevation can vary by more than two feet (highest of 639.60 feet in October of 1996 and lowest of 637.36 feet on January 10, 1989). Beside this change, there may be additional changes in water level when the pond is closed, and water from the leaking pipes at the eastern boundary of Area A is no longer available. The facility should consider this potential change in the water table to ensure that the water table does not fall below the bottom of the piezometer screens.

**Response:** Based on a review of the available groundwater elevation data and estimated surface elevations of the proposed piezometers, the proposed piezometer depth of 12 feet is considered sufficient to monitor the water table beneath the landfill. It is estimated that the bases of piezometers PZ-1 and PZ-2, the piezometers closest to the pond, would be approximately 5 feet below the water table, indicating that the water table would not fall below the bases of the piezometers.

5. The facility proposed to determine the vertical permeability of the soil in Area A to determine the potential infiltration through the clay cap.
  - a. Four samples are planned to be collected by driving Shelby tubes with a Geoprobe pneumatic hammer. Apparently, the locations of these samples were not indicated in the submittal. The DDAGW recommends that at least one sample should be collected from the northern boundary of Area A, close to the location where seeps were observed. This sample may provide indications of any deterioration in the performance of the clay cap in that area.



**Response:** One of the four Shelby tube samples will be collected along the eastern boundary of Area A, adjacent to the RMI-3S seep area. The remaining three Shelby tube samples will be collected adjacent to seeps associated with the thin soil zone.

- b. The technique to be used for determining the vertical permeability of the soil samples is not mentioned. The facility should discuss the selected laboratory technique in the ground water monitoring plan.

**Response:** The technique for determining the vertical permeability of the soil will be the standard permeability test using the constant head method, ASTM D-2434.

6. Although seeps were observed near the northern boundary of Area A, the proposed monitoring system included no piezometer or monitoring well in the area of concern roughly outlined by RMI-3S in the Area A, water tower, and pond. The facility should include monitoring locations within this area to evaluate the effects on water table elevations of the pond and the water leaking from pipes in the water tower. According to Figure 1-3, there are two piezometers (PZ-18, PZ-19) already existing in this area. If these two piezometers are still in satisfactory condition, the facility should include them under the proposed monitoring system. Alternatively, the facility should consider installing two additional piezometers at locations close to PZ-18 and PZ-19.

**Response:** The objective of the groundwater monitoring plan is to evaluate the influence of the pond and pipes on the landfill. RMI believes that the proposed monitoring network meets that objective. Piezometers PZ-18 and PZ-19 no longer exist. As previously indicated, the recharge from the pond and leaky pipes no longer exists along the eastern boundary of Area A. As a result, additional piezometers in this area would yield little beneficial information.



7. The facility in page 1-2 indicated that "ground water flows from the eastern pond/water tower area generally to the south towards the surface drainage channels." The water table elevation contours in Figure 1-3, however, indicate ground water flow towards the northwest. The facility should correct this discrepancy.

**Response:** The groundwater contour map presented in Figure 1-3 of the Groundwater Monitoring Plan indicates that groundwater flow associated with the pond/water tower is radially away from these recharge sources. As a result, groundwater beneath the eastern portion of Area A flows primarily to the west-northwest towards the surface drainage channels.

8. To evaluate the effects of four storm events on the ground water system, the facility proposed to monitor water table elevations within 48 hours of each significant (rainfall >2 inches) storm event. Whether a 48-hour period is long enough to see the effects of significant precipitation events based on the thickness and anticipated conductivity of the soil cap, however, is not addressed in the plan. The facility should consider the thickness and conductivity of the material above the water table and ensure that the proposed monitoring period is long enough to detect the effects of precipitation on the water table elevations in the study area.

**Response:** The groundwater monitoring plan indicates that each significant storm event (rainfall >2 inches) will be monitored during the 10 month monitoring period. It is not the intent of RMI-SP to extend the monitoring period beyond 10 months to ensure 4 storm events are monitored. To help make sure that the storm event monitoring is appropriate, groundwater elevations for the first storm event will be monitored within 24 hours, 48 hours, 72 hours, and 96 hours of the event. Based on these data, the 48 hour monitoring period will be evaluated for monitoring subsequent storm events.



9. The facility indicated that the observed seeps near the northern boundary of the landfill Area A represent a perched water zone on the clay cap formed by the precipitated water infiltrating into the soil zone. The proposed monitoring system design, however, included no component to test this assumption.

**Response:** The groundwater monitoring plan states that other seeps were observed within the perimeter of the landfill, generally west of the seep near monitoring well RMI-3S. These seeps were observed at elevations that were at or above the RMI-3S seep elevation of approximately 639 feet msl. In general, these seeps were observed at elevations greater than 641 feet msl. As indicated on Groundwater Monitoring Plan Figure 1-3, water table elevations beneath the landfill are below the observed elevations of the seeps. Therefore, it would be unlikely that these seeps would be emanating from the underlying water table. These seeps are believed to emanate from additional cover soil that was placed atop the existing clay cap to facilitate vegetation after the landfill was closed. Water from precipitation infiltrates into this soil zone and creates a limited perched zone atop the clay cap. These soil zones are relatively thin (i.e., two inches to two feet in thickness). Since the clay cap is crowned, groundwater within this zone moves laterally and creates small seeps where the soil pinches out atop the clay cap.

The proposed piezometer and monitoring well network is specifically designed to evaluate these seeps. The lateral distribution of the monitoring network will allow for sufficient data to characterize the water table surface beneath the landfill. Comparisons will be made between the water table surface elevation and the observed seep elevations. If the water table surface is demonstrated to be below the seep elevations, the conclusion can be drawn that the seeps are not a result of groundwater mounding within the landfill, but a result of perched water within the thin soil zone which lies atop the clay cap.

- a. To determine whether the observed seeps are related to a perched water table, the facility should install additional piezometers at the northernmost portion of



Area A. Each of these piezometers should be screened at an elevation equivalent to the uppermost portion of the clay cap.

**Response:** The seeps were observed within the interior of the landfill, generally above 641 feet in elevation. The proposed groundwater monitoring network is sufficient to characterize the water table beneath the landfill. Comparisons between the water table elevations and the seep elevations will be used to evaluate the relationship between the seeps and the water table.

- b. The facility should also investigate the presence of a perched water table, and if present, determine its relation with seasonal changes in the water table in the glacial till and with significant precipitation events.

**Response:** One of the primary objectives of the proposed groundwater monitoring plan is to evaluate the presence of a perched water zone. This will be accomplished by characterizing the water table beneath the landfill. Since the perched soil zone is considered to be relatively thin (i.e., approximately two inches to 2 feet), no attempt will be made to place piezometers within this thin zone. As stated in the groundwater monitoring plan, seasonal variations associated with the till water table are to be evaluated. Additionally, during each groundwater monitoring event the seeps, if present, will be observed to estimate the number and magnitude of flows.

10. The facility did not provide adequate information regarding the stratigraphy of Area A and adjacent areas. Figure 1-1 displays a cross-section AA' that is oriented along an east-west direction and passes through RMI-4S and RMI-1S. The facility should indicate the thickness and position of the clay cap and overlying soils and the contact between the landfill material and unweathered glacial till in this cross-section.



**Response:** The cross-section presented in Figure 1-1 was presented to give a general overview of the landfill in relationship to the underlying water table. Due to the scale of the cross-section the clay cap was not depicted. Based on the available information, the clay cap overlies the top of the landfill and is approximately 2 feet in thickness. A thin soil zone overlies the clay cap in localized areas and is estimated to range in thickness from 2 inches to approximately 2 feet. Soil samples collected during the Shelby tube sampling will provide information regarding the thin soil zone. The objective of the plan is to evaluate groundwater elevation in relationship to the surface seeps, which are estimated to be 4 to 5 feet above the water table. Providing detailed information as to the contact between the landfill material and the unweathered glacial till is not relevant to the objective. Figure 1-1 is sufficient and requires no revision.

11. The objectives of the submitted ground water monitoring plan include determination of the effects of the repair of water pipes and the closure of the water pond (p. 1-3). This plan lacks a definite schedule for completing these two events. The facility should clearly indicate when and at what stage of the proposed monitoring program these operations will be performed. The seasonal changes in ground water elevation should be differentiated from the effects of these two events.

**Response:** During the review period for the Groundwater Monitoring Plan, the closure of the pond and repair of the leaking pipes were completed. The facility has been collecting groundwater elevation data from RMI-3S on a periodic basis since prior to completion of these two events.



**GROUNDWATER MONITORING  
PLAN  
FOR THE CLOSED LANDFILL  
(AREA A)  
AT THE RMI SODIUM PLANT  
ASHTABULA, OHIO**

**Prepared for:**

**RMI Titanium Company  
Niles, Ohio**

**Prepared by:**

**ECKENFELDER INC.®  
227 French Landing Drive  
Nashville, Tennessee 37228  
(615) 255-2288**

**November 1997**

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## 1.0 INTRODUCTION

This Work Plan has been prepared in response to an August 26, 1997 letter from Ms. Adrienne La Favre and Mr. Thomas J. Basel of Ohio EPA, to Mr. Richard L. Mason of RMI Titanium Company to address concerns associated with the sporadic seeps observed within the footprint of Area A, a closed landfill at the RMI Sodium Plant in Ashtabula, Ohio. RMI considers that the majority of these seeps result from perched water within a soil cover which diverts water laterally atop the existing clay cap, and elevated groundwater levels due to additional recharge from the water pond and leaky water pipes associated with the water tower east of Area A. As a means of demonstrating such, the following Work Plan has been developed. RMI has repaired the leaking pipes and is in the process of closing the water pond.

### 1.1 BACKGROUND INFORMATION

The Ohio EPA has raised concerns as to the origins of observed seeps and the integrity of the existing clay cap at Area A. The following discussion provides an overview of the groundwater system and specific details related to the groundwater monitoring plan proposed to help address these concerns.

A number of previous subsurface site investigations and groundwater monitoring evaluations have been performed at the RMI Sodium facility. The objectives of these investigations were to determine the stratigraphic sequence of the geologic formations at specific locations within the boundary of the Sodium Plant, determine the nature and amounts of constituents in groundwater, including the vicinity of Area A, and to determine the directions of groundwater flow. As a result of the investigations, three hydrostratigraphic units were observed beneath the RMI site (see Figure 1-1). The uppermost unit, an unconfined water table zone, exists within the fill and weathered glacial till with presumed moderate hydraulic conductivity. The water-table zone ranges from 5 to 10 feet in thickness and the base of the zone is generally found at a depth range of 10 feet to 15 feet. This water-bearing unit is continuous throughout the site and is the primary unit for the lateral transport of groundwater at the site. A second unit, a semi-confining unit, underlies the water table zone and is comprised of unweathered glacial till. This unit is of presumed lower hydraulic conductivity and separates the shallow water table zone from the



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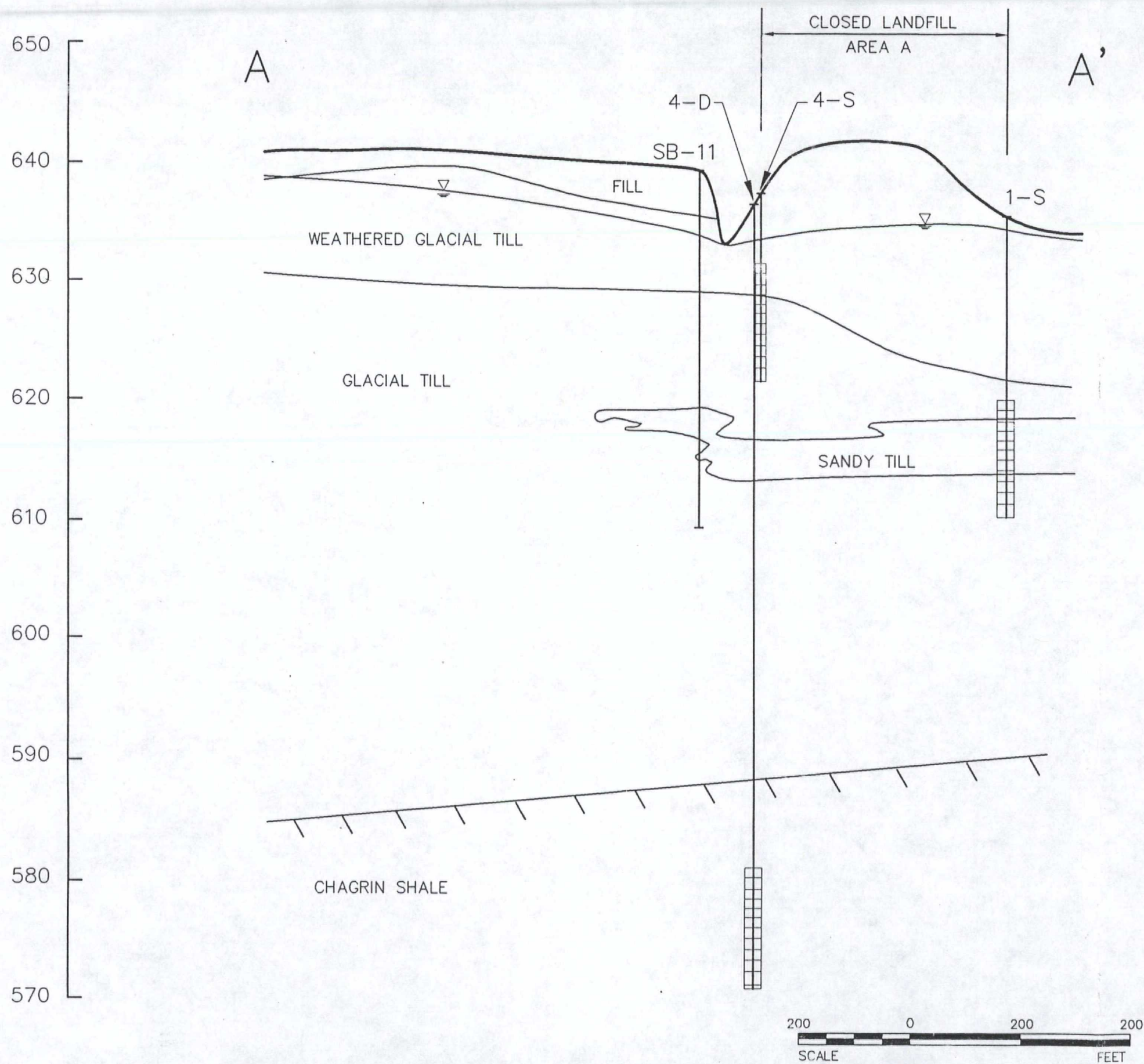


FIGURE 1-1  
CROSS-SECTION A-A'

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third unit, the lower bedrock water-bearing zone. The lower bedrock water-bearing zone is semi-confined and exists as a zone located within the upper portion of the shale bedrock. Groundwater monitoring associated with this work plan will focus primarily on the upper water table unit.

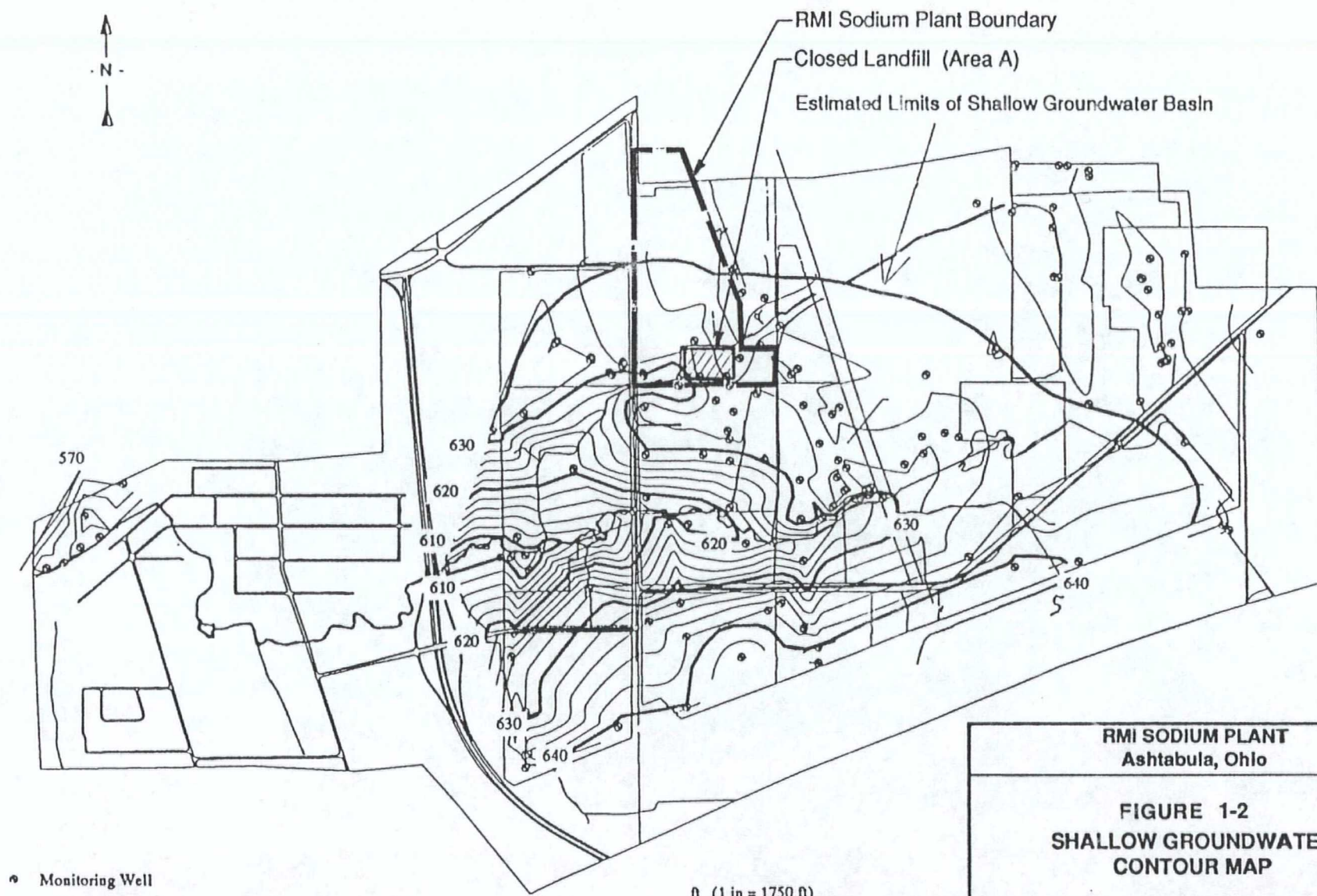
Recent groundwater data collected by Woodward-Clyde as part of the Fields Brook Superfund Site investigation indicate that groundwater within the water table zone flows generally toward the southwest (Figure 1-2); however, local flow directions at the RMI Sodium site are significantly influenced by recharge from several ponds and discharge to surface water drainage channels. Figure 1-3 presents a water table surface map from the approved Supplemental RFI Report (ECKENFELDER INC., 1991). As can be seen, groundwater flow beneath Area A is greatly influenced by the adjacent water pond and surrounding surface water drainage. Groundwater beneath Area A ranges in elevation from 637.91 feet msl to 633 feet msl, with the high groundwater elevation observed in association with the adjacent water pond. A comparison of the groundwater elevations to the surface contours indicates that groundwater elevations are below the toe of the landfill.

A groundwater elevation of 639.6 feet msl was observed in monitoring well RMI-3S in October 1996. This elevation is approximately 0.75 feet below ground surface. At the time of this measurement, a surface seep was observed approximately 25 feet to the northeast of RMI-3S. The pond at this time was full and the entire area surrounding the water tower was flooded due, in part, to leaky water pipes associated with the tower. The introduction of this additional recharge is believed to have increased groundwater elevations along the eastern perimeter of Area A, resulting in the associated seep.

It has been contended by Ohio EPA that infiltration through the clay has created a groundwater elevation mound within Area A which resulted in this seep. However, RMI believes that additional recharge from the pond and water tower line leaks are the cause of the seep. Referring back to Figure 1-3, it can be seen that groundwater elevations are the highest along the eastern perimeter of Area A, and groundwater flows from the eastern pond/water tower area generally to the south towards the surface drainage channels. An increase in recharge in this area has resulted in an increase in groundwater elevations, forming the associated seep. Additionally, a



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SOURCE: Woodward-Clyde Consultants, Fields Brook SCRI Phase I, July 1993

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Ashtabula, Ohio

FIGURE 1-2  
SHALLOW GROUNDWATER  
CONTOUR MAP

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groundwater sample was collected from this seep on October 29, 1996 and analyzed for barium, cadmium, and lead. Barium was the only detected parameter (52 ug/L).

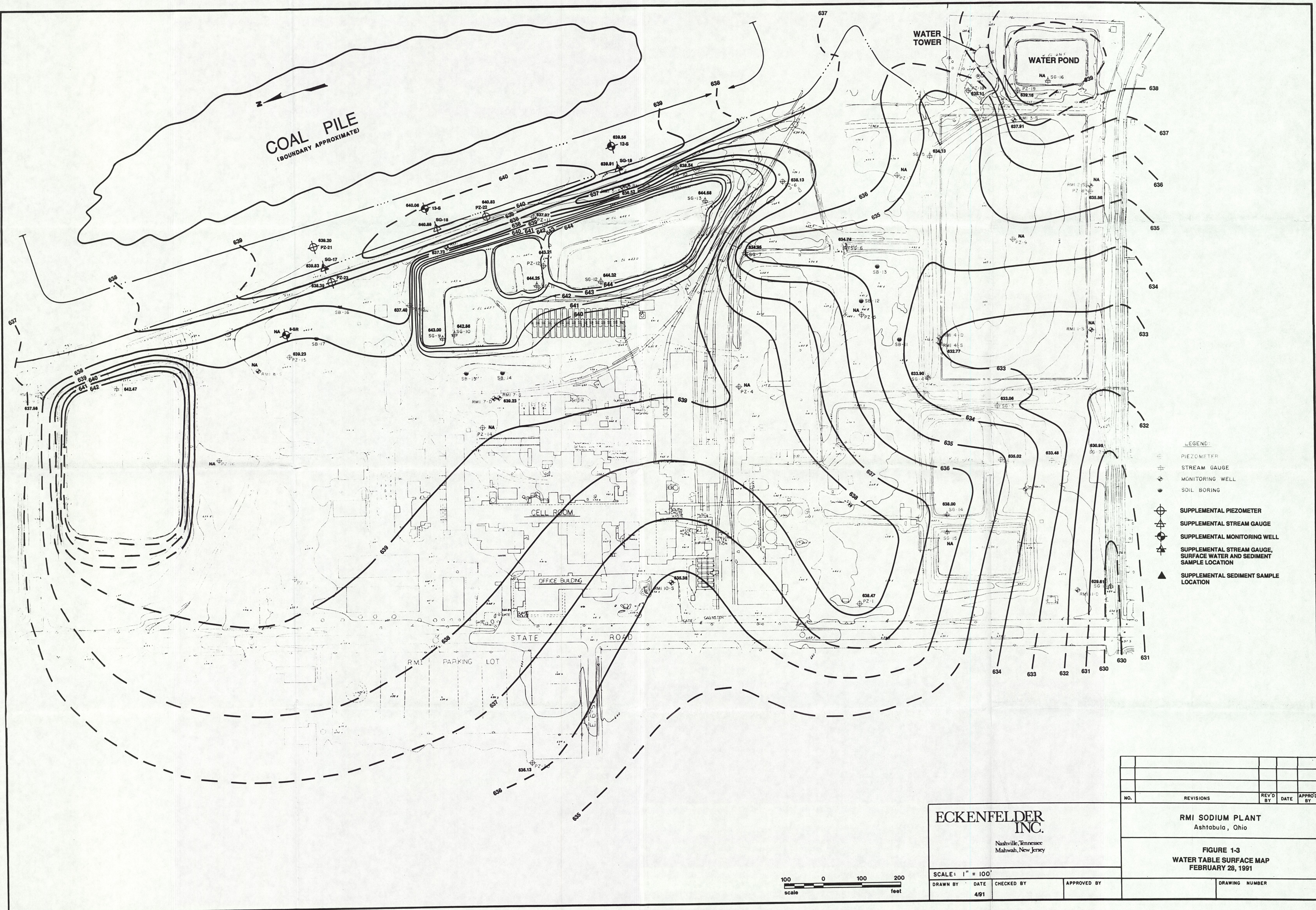
Other seeps were observed within the perimeter of the landfill, west of the seep near RMI-3S. These seeps were observed at an elevation that was at or above the RMI-3S seep elevation of 639 feet msl. Based on potentiometric maps, the groundwater flow system for Area A indicates that the highest groundwater elevation has been observed along the eastern perimeter. Under this conceptual model, groundwater elevations to the west would be at lower elevations. Therefore, it would be unlikely that seeps west of RMI-3S would be emanating from the underlying water table surface. These seeps are believed to emanate from soil that was placed on the existing clay cap after the original landfill closure. Water from precipitation infiltrates into this soil zone and creates a perched zone atop the clay cap. Since the cap is crowned, groundwater within this zone moves laterally and creates small seeps where the soil pinches out atop the clay cap.

## 1.2 OBJECTIVES

The overall objectives of this Monitoring Plan are to evaluate groundwater levels within Area A and the surrounding weathered glacial till, and to evaluate infiltration rates through the existing landfill clay cap. Specific objectives are as follows:

- Compile and review historical groundwater elevation data associated with Area A to evaluate groundwater elevations prior to repair of water pipes and closure of the water pond.
- Monitor groundwater elevations within Area A and determine the effects, if any, of seasonal variation or storm events, the repair of water pipes, and the closure of the water pond.
- Evaluate potential infiltration through the existing clay cap.







## **2.0 SHALLOW GROUNDWATER MONITORING PROGRAM**

Four existing shallow monitoring wells are located on the perimeter of Area A (RMI 1-S, 2-S, 3-S, and 4-S). Monitoring well RMI-3S is located east and upgradient of Area A. Monitoring wells RMI-1S, 2S, and 4S are downgradient south and north of Area A (Figure 1-3). Additionally, both RMI-1S and 2S are screened in an isolated sand lens within the unweathered glacial till semiconfining unit, rather than in the water table, rendering them inappropriate for monitoring water table groundwater elevations.

### **2.1 GROUNDWATER MONITORING PROGRAM**

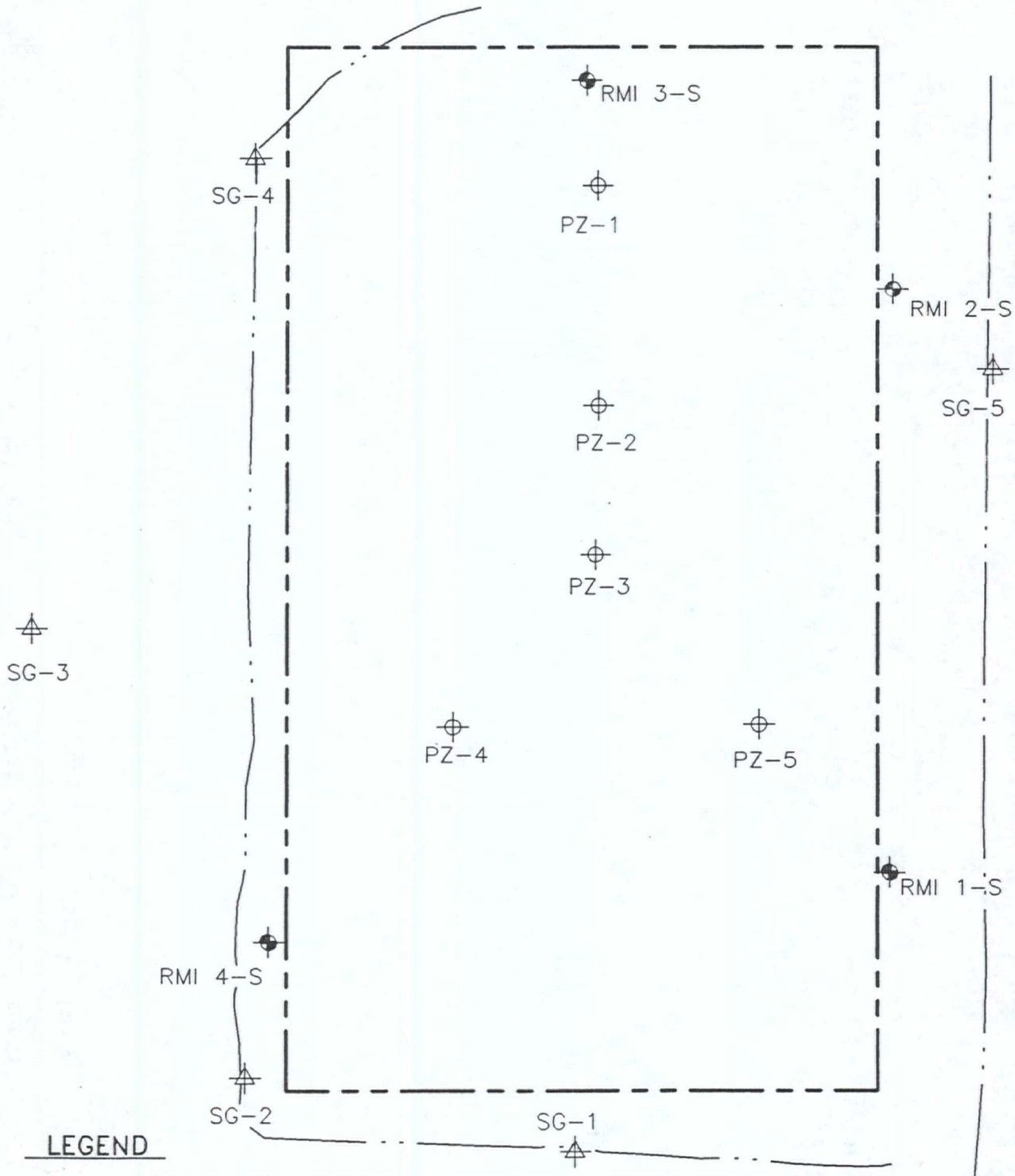
To evaluate groundwater elevations in relationship to the previously discussed seeps, a groundwater water monitoring program has been developed to include the use of existing wells (RMI-3S and RMI-4S), the installation of 5 piezometers within Area A, and the installation of 5 staff gauges. The locations of the monitoring well, proposed piezometers, and staff gauges are presented in Figure 2-1.

### **2.2 PIEZOMETER AND STAFF GAUGE INSTALLATION**




#### **2.2.1 Piezometer Installation**

Proposed piezometers PZ-1, PZ-2, PZ-3, PZ-4, and PZ-5 will be installed by means of a Geoprobe® direct push unit. The Geoprobe® unit will be used to drive a one-inch diameter PVC casing and one-inch diameter PVC screen to a depth of approximately 12 feet (approximately 2 feet below the water table). Following installation of the piezometer, a 4-inch diameter steel protective casing 3 feet in length will be placed atop the piezometer such that the casing will extend approximately 1.5 feet below grade. The casing will be set in place with concrete and contain a secure lockable cap which will prevent unauthorized entry to the piezometer.

The installations will be performed under the supervision of a hydrogeologist. The field hydrogeologist will direct the work, and prepare logs of the geologic conditions encountered and of the piezometer construction.



**LEGEND**

-  EXISTING MONITORING WELL LOCATIONS
-  PROPOSED PIEZOMETER WELL LAYOUT
-  PROPOSED STAFF GAUGE LAYOUT

--- APPROXIMATE EXTENTS OF AREA A



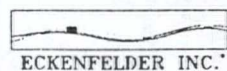
FIGURE 2-1

**MONITORING WELL, PIEZOMETER,  
AND STAFF GAUGE LOCATIONS**

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A field log book will be maintained by the hydrogeologist and will include an account of all activities, materials, quantities, and observations. These notes will then be copied onto a standard boring log report form.

### **2.2.2 Piezometer Development**

Upon the completion of a piezometer, it will be developed to facilitate proper communication with the formation. Each piezometer will be developed by purging with a peristaltic pump. Development will be continued until the returned water is relatively free of sediment. This condition will be determined visually by the field hydrogeologist.

### **2.2.3 Staff Gauge Installation**

Five staff gauges will be installed as part of this monitoring program. Each staff gauge will consist of a 5 foot length of one-inch diameter PVC. Each staff gauge will be driven approximately 2 feet into the base of the surface drainage feature using a sledge hammer. To the extent practicable, these staff gauges will be located near locations of former staff gauges to allow comparison to historic information.

### **2.2.4 Survey**

Each newly installed piezometer and staff gauge will be surveyed for elevation. The elevation of the adjacent ground surface and a top-of-casing reference point will be determined to within 0.1 feet and 0.01 feet, respectively. The reference point shall be the northernmost location of the innermost piezometer casing at each installation. Additionally the piezometers and staff gauges will be surveyed for horizontal control to within 0.1 feet. All surveying will be conducted under the direction of a licensed surveyor.

## **2.3 WATER LEVEL MONITORING**

To evaluate groundwater levels in relationship to the previously discussed seeps, groundwater elevations in the existing monitoring wells, proposed piezometers, and staff gauges will be monitored. Elevations at these monitoring points will be measured once monthly for a period of 10 months to evaluate seasonal variations.



To evaluate the effects of storm events on the groundwater system, groundwater elevations will be monitored within 48 hours of each significant storm event. For the purposes of this Monitoring Plan a significant storm event has been defined as a rainfall event of 2 inches or more. Approximately four storm events will be monitored during this evaluation period.

The depth to groundwater or surface water will be measured with an electronic depth indicating sounder. A decontaminated probe will be lowered into the piezometer or beside a staff gauge until the meter indicates that water is reached. The probe will be raised above the water level and slowly lowered again until water is again indicated. The cable will be held against the side of the inner casing or gauge at the point designated for water level measurements and a depth reading obtained. This procedure will be followed three times or until a consistent value is obtained. The value will be recorded to the nearest 0.01 feet in the field log book. The probe will be raised to the surface, and, together with the amount of cable that was wetted in the well, will be decontaminated with a distilled/deionized water rinse.

## 2.4 AREA A INFILTRATION EVALUATION

Infiltration through the clay cap will be evaluated using an appropriate groundwater infiltration model. At this time, the USEPA HELP model is anticipated to be used; however, if a more appropriate model is determined, that model will be used in the final evaluation. To facilitate the evaluation of potential infiltration through the clay cap, vertical permeability of the cap will be measured by collecting four soil samples. The soil tube samples will be collected from the clay cap material using Shelby tubes. Tubes will be driven with the Geoprobe® pneumatic hammer. Upon retrieval of the tubes, melted wax will be used to seal the clay sample intact for shipping.



### 3.0 SITE INVESTIGATION REPORT

Upon completion of the 10-month groundwater monitoring program, a draft report will be prepared to document the data collection activities and results. In general, the report content will include:

- Introduction. A brief summary derived from Section 1 of this Work Plan will be included.
- Field Procedures. A discussion of the implementation and methods of investigation will be provided.
- Evaluation. A discussion of groundwater elevation data and the infiltration estimates will be prepared. Maps, figures, and cross sections will be used, as necessary.

The draft report will be submitted to RMI for review and, upon approval, a draft final version will be prepared and submitted to the Ohio EPA.



APPENDIX A

OHIO EPA LETTER TO RICHARD MASON (RMI) AUGUST 26, 1997





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road

Twinsburg, Ohio 44087-1969

(216) 425-9171

FAX (216) 487-0769

George V. Voinovich  
Governor

August 26, 1997

RE: RMI TITANIUM CO.  
SODIUM PLANT  
OHD 000 810 242  
ASHTABULA COUNTY  
HWFB #02-04-0584

Mr. Richard Mason  
Director of Environmental Affairs  
RMI Titanium Co.  
P.O. Box 269  
1000 Warren Ave.  
Niles, Ohio 44446-0269

Dear Mr. Mason:

The Northeast District Office of the Ohio EPA has received your submittal dated July 25, 1997. By receipt of this submittal, Ohio EPA acknowledges that the RMI Titanium Co. (RMI) has responded to the Agency's June 24, 1997, Partial Return to Compliance letter. Documentation received included the following:

- A.) a narrative addressing leachate outbreaks/seeps existing within the boundary of Area A;
- B.) a narrative addressing control of tree and shrub growth within the boundary of Area A; and
- C.) a narrative addressing erosion near a number of the facility's ground water wells.

As a result of Ohio EPA's review of this documentation, the following questions, comments, and/or requests for additional information were identified:

- 1.) Regarding item "5.b.", it was stated, in part, within the facility's response to said item that "...during periods of sufficient precipitation, water exceeding the evapotranspiration rate of the vegetative cover and storage capacity of the soil added subsequent to the initial closure is diverted laterally by the existing clay cap. Therefore, this excess precipitation is expressed as seeps discharging near the crest of the landfill and at the toe areas. This type of drainage is not groundwater or leachate."



Mr. Richard Mason  
Director of Environmental Affairs  
RMI Titanium Co.  
August 26, 1997  
Page Two

Please provide at this time a detailed discussion of any and all field investigatory activities which were conducted and utilized as a basis for the facility's explanation of the above mentioned seeps.

- 2.) Regarding item "5.b.", it was stated, in part, within the facility's response to said item that "RMI and Eckenfelder, Inc. believe that seeps along the eastern boundary of the Area A are also due, in part, to the presence of the water pond and leaky water pipes associated with the water tower located immediately east of the landfill. These two features create additional recharge to the eastern portion of Area A. As a result, groundwater surfaces are elevated, thereby contributing to the emergence of seeps along the eastern toe of the landfill. RMI is in the process...."

While Ohio EPA agrees that the pond and the leaky piping have most likely contributed to the saturated nature of the waste material disposed of within Area A, the Agency believes that this unit's existing cover has failed as well, and that the associated infiltration of precipitation into the waste also contributes to the continuing leachate outbreaks/seeps observed within said area.

The facility has indicated that by eliminating the pond and by repairing all defective piping, the leachate outbreaks/seeps currently existing within Area A will be addressed. These measures, while of apparent benefit, will do little to control infiltration through the unit's existing cover.

RMI appears to have taken the position that Area A's existing cover is adequate. As a means of demonstrating such, Ohio EPA requests that the facility provide at this time a work plan to address the following:

- a.) Determination of the liquid head level within the waste currently;



Mr. Richard Mason  
Director of Environmental Affairs  
RMI Titanium Co.  
August 26, 1997  
Page Three

- b.) Determination of the liquid head level within the waste once the pond has been eliminated and the defective piping repaired; and
- c.) Determination of the amount of infiltration through Area A's existing cover;

The plan should address the manner in which liquid head levels are affected as a result of seasonal variation, storm events, etc.

- 3.) Regarding items "5.e." and "5.g.", RMI is not being directed to take any further actions in these matters at this time.

Failure to list specific deficiencies in this communication does not relieve RMI Titanium Co. from the responsibility of complying with all applicable hazardous waste regulations. This letter does not relieve RMI Titanium Co. from liability for any past or present violations of the state's hazardous waste laws.

Sincerely,

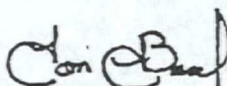


Adrienne La Favre  
District Representative  
Division of Hazardous Waste  
Management; and

ALF/TJB/cl

cc: Frank Popotnik, DHWM, NEDO, OEPA  
Linda Neumann, DHWM, CO, OEPA  
Erm Gomes, DSW, NEDO, OEPA  
Thomas Matheson, USEPA, Region V

Sincerely,



Thomas J. Basel  
Environmental Engineer  
Division of Hazardous Waste  
Management







Information to demonstrate  
no reactivity characteristic  
in cell bath waste

Provided by  
RMI @ Settlement Mtg.  
January 22, 1993

21 JAN 1993

RMI Titanium Company Sodium Plant

Cell Bath Waste Analytical Results

<u>Date</u>	<u>Number of Samples</u>	<u>Laboratory</u>
2/92	3	Eckenfelder
10/90	1	Eckenfelder
3/90	1	Antech
2/90	2	Microbac
1/90	1	ChemWaste
11/89	1	Mack
11/89	2	Microbac
10/89	1	Microbac
9/89	1	Microbac
4/89	1	HES
4/89	1	Surbond
9/88	1	Aware (Eckenfelder)
2/88	1	Free-Col
1/88	1	Aware (Eckenfelder)
3/85	3	Tri-State
12/83	1	Standard (Tri-State)
10/80	1	Envirolab
4/79	1	Arthur D. Little
Undated	<u>1</u>	Standard (Tri-State)
	25	



ECKENFELDER INC.

CLIENT: RMI TITANIUM

DATE SAMPLED: 2/20/92

DATE RECEIVED: 2/24/92

DATE REPORTED: 3/10/92

DATE REVISED: 3/24/92

ECKENFELDER SAMPLE NUMBER					1316	1317	1318
CLIENT SAMPLE DESCRIPTION					BARIUM CELL BATH	CALCIUM CELL BATH	SLUDGE CELL BATH
TCLP METALS	DETECTION LIMITS	REGULATORY LIMITS	DATE OF ANALYSIS	ANALYST	CONC	CONC	CONC
ARSENIC	0.03	5.0	3/6/92	B.D.	BMDL	<0.15	<0.15
BARIUM	0.005	100	3/6/92	B.D.	8850	270	360
CADMIUM	0.003	1.0	3/6/92	B.D.	0.005	<0.015	<0.015
CHROMIUM	0.002	5.0	3/6/92	B.D.	0.046	0.034	0.013
LEAD	0.02	5.0	3/6/92	B.D.	0.09	<0.10	<0.10
MERCURY	0.002	0.2	3/4/92	C.D.	BMDL	BMDL	BMDL
SELENIUM	0.035	1.0	3/6/92	B.D.	0.055	<0.175	<0.175
SILVER	0.003	5.0	3/6/92	B.D.	BMDL	0.032	0.023
ORIGINAL pH (units)	NA	NA	2/26/92	D.M.	11.3	11.7	10.5
FINAL pH (units)	NA	NA	2/26/92	D.M.	4.78	4.89	4.62

ALL RESULTS EXPRESSED IN MILLIGRAMS/LITER  
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

NA = NOT APPLICABLE

ECKENFELDER INC.

*Jeffrey Hill*

JEFFREY L. HILL

INORGANIC SECTION LEADER



ECKENFELDER INC.

**CLIENT: RMI TITANIUM**

**DATE SAMPLED: 2/20/92**

**DATE RECEIVED: 2/24/92**

**DATE REPORTED: 3/10/92**

ECKENFELDER SAMPLE NUMBER					1316	1317	1318
CLIENT SAMPLE DESCRIPTION					BARIUM CELL BATH	CALCIUM CELL BATH	SLUDGE CELL BATH
WET CHEMISTRY	DETECTION LIMITS	USEPA METHOD	DATE OF ANALYSIS	ANALYST	CONC	CONC	CONC
PAINT FILTER TEST	0	9095	3/10/92	D.A.	BMDL	BMDL	BMDL

**ALL RESULTS EXPRESSED IN MILLILITERS  
UNLESS OTHERWISE NOTED.**

**BMDL = BELOW METHOD DETECTION LIMITS**

**ECKENFELDER INC.**

*Jeffrey Hill*

**JEFFREY L. HILL  
INORGANIC SECTION LEADER**

227 French Landing Drive  
Nashville, Tennessee 37228  
615.255.2288  
FAX 615.256.8332



# ECKENFELDER INC.

CLIENT: RMI TITANIUM  
 DATE RECEIVED: 10/12/90  
 DATE REPORTED: 10/29/90

ECKENFELDER SAMPLE DESCRIPTION				7809
CLIENT SAMPLE DESCRIPTION				
				CELL BATH
				WASTE
TCLP	DETECTION	REGULATORY		
METALS	LIMITS	LIMITS	CONC	
ARSENIC	0.005	5.0	BMDL	
BARIUM	0.20	100	259	
CADMIUM	0.005	1.0	0.023	
CHROMIUM	0.05	5.0	0.16	
LEAD	0.10	5.0	0.67	
MERCURY	0.002	0.2	0.006	
SELENIUM	0.005	1.0	BMDL	
SILVER	0.01	5.0	0.04	

ALL RESULTS EXPRESSED IN MILLIGRAMS/LITER  
 UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT  
 NR = NOT REQUESTED

ECKENFELDER INC.

*Jeff Hill for*

D. RICK DAVIS  
 VICE PRESIDENT/ANALYTICAL & TESTING SERVICES

227 French Landing Drive  
 Nashville, Tennessee 37228  
 615.255.2288  
 FAX 615.256.8332



General Data Table



Antech Ltd.  
One Triangle Drive  
Export  
Pennsylvania 15632  
412/733-1161

Client: Mr. William R. Kelly  
Director of Technical Services  
Mill Service, Inc.  
1815 Washington Road  
Pittsburgh, PA 15241

Antech Project No.: 90-0557  
Receipt Date: 3/23/90  
Verbal Report Date: NR  
Report Date: 4/9/90  
Page 1 of 1

Reference: Waste Characterization; Treatability Study; RMI Company;  
Ashtabula, OH; Collected March 23, 1990

Parameter	Units	Sample Identification
		03-1000 (Cell Bath Waste)
ASTM (1:20):		
Ammonia	mg/l NH <sub>3</sub> -N	4.6
Oil and Grease	mg/l	1
pH	pH units	11.90
Total Organic Carbon	mg/l	<1
Phenolics	mg/l	<0.1
Chemical Oxygen Demand	mg/l	51
Volatile Residue @ 550°C	mg/l	1,630
Hexavalent Chromium	mg/l	<0.01
Total Dissolved Solids @ 180°C	mg/l	14,200
EP Toxicity Metals:		
Arsenic	mg/l	0.2
Barium	mg/l	<10
Cadmium	mg/l	<0.1
Chromium	mg/l	<0.1
Lead	mg/l	0.2
Mercury(1)	mg/l	<0.01
Nickel	mg/l	<1
Selenium	mg/l	0.3
Silver	mg/l	<0.1
EP Toxicity Data:		
Initial pH	pH units	12.30
Final pH	pH units	12.10
Amount of 0.5N Acetic Acid Added per 100-Gram Sample	ml	400

(1) Analyses performed using Method of Standard Addition.

Approved: Thomas W. Hill



# Microbac

## Microbac Laboratories, Inc.

ERIE DIVISION  
1962 WAGEP RD.  
ERIE, PA 16509  
(814) 837-8532

AIR • FUEL • WATER • FOOD • WASTES

### CERTIFICATE OF ANALYSIS

RMI COMPANY, SODIUM PLANT  
P.O. BOX 550  
STATE ROAD & EAST 6TH ST.  
ASHTABULA OH 44004  
ATTN: MIKE MILLER

DATE REPORTED 03/22/90  
DATE RECEIVED 02/20/90  
CUST P.O.# 3-78564+1  
ORDER NO 4470  
INVOICE NO 52656

SUBJECT : BARIUM CELL BATH & WASTE BATH-BARIUM CELL, 2/20/90

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
1	BARIUM CELL BATH	2/14/90, EPA EXTRACT	
	E.P. TOXICITY EXTRACT PREP		"
	SILVER IN EXTRACT	<0.020	MG/L
	ARSENIC IN EXTRACT	0.0264	MG/L
	BARIUM IN EXTRACT	13,100	MG/L
	CADMIUM IN EXTRACT	<0.005	MG/L
	CHROMIUM IN EXTRACT	0.012	MG/L
	MERCURY IN EXTRACT	<0.0002	MG/L
	LEAD IN EXTRACT	<0.05	MG/L
	SELENIUM IN EXTRACT	0.0054	MG/L
	INITIAL PH OF EXTRACT	10.0	"
	FINAL PH OF EXTRACT	4.8	"
	CONCLUSION	SEE BELOW	"
	PROCEDURE SHEET ENCLOSED	ENCLOSURE	"
2	WASTE BATH-BARIUM CELL	2/14/90, EPA EXTRACT	
	E.P. TOXICITY EXTRACT PREP		"
	SILVER IN EXTRACT	<0.020	MG/L
	ARSENIC IN EXTRACT	0.007	MG/L
	BARIUM IN EXTRACT	12,200	MG/L
	CADMIUM IN EXTRACT	<0.005	MG/L
	CHROMIUM IN EXTRACT	0.011	MG/L
	MERCURY IN EXTRACT	<0.0002	MG/L
	LEAD IN EXTRACT	<0.05	MG/L
	SELENIUM IN EXTRACT	<0.0012	MG/L
	INITIAL PH OF EXTRACT	11.0	"
	FINAL PH OF EXTRACT	5.0	"
	CONCLUSION	SEE BELOW	"

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE





DATE: 01/29/90

CHEMICAL WASTE MANAGEMENT, INC  
WASTE PROFILE SUMMARYPROFILE : F11827  
SALES OFC : COL  
LAB NUMBER: 90410MGENERATOR: R M I - SODIUM PLANT  
ADDL LINE:  
ADDRESS : STATE ROAD AND E 6TH STREET  
CITY/ST : ASHTABULA OH 44004  
CONTACT : JOE T. HOLMAN  
PHONE NBR: 216/652-9951NUMBER : 6955309668  
APPROVE : 02/17/89  
EXPIRATION: 02/14/91  
LAST LOAD : 01/25/90  
STATUS : APPROVED  
FINALIZED : 02/17/89  
EPA STATUS: BOTH STOR./LANDWASTE NAME: CELL BATH WASTE  
SHIP. NAME: HAZARDOUS WASTE SOLID, NOS

(D006,D008,D005)

## \*\*\*\*\*CHEMICAL COMPOSITION\*\*\*\*\*

SODIUM CHLORIDE - 31  
CALCIUM CHLORIDE - 50  
BARIUM SULFATE - 2  
ABSORBENT (SPEEDY DRI (R)) - 12  
WATER (COMBINED) - 5  
TRACE METALS 0- 1  
SECURE LANDFILL -PHYSICAL STATE : SOLID  
FLASH POINT : NONE  
PH : 7-10  
PER. TAXABLE : 51  
TREATMENT CODES: NTC  
FEDERAL CODES : D006 D008 D005STATE CODES :  
FEDERAL EPA ID : OHD000810242  
ADEM NUMBER : 022090-0057  
EPA PERMIT NO. :  
EPA EXPIRATION : / /  
CWM CODE : 151  
MATERIAL CLASS : I  
DOT UN/NA NBR. : NA9189  
CERCLA QUANTITY: N/A

## \*\*\*\*\*DOT PROPERTIES\*\*\*\*\*

INHALATION REACTIVITY  
DERMAL ORAL  
FLAMMABLE HEALTH

## \*\*\*\*\*METALS - EP TOX/CLP

ARSENIC < 5 ppm COPPER 3.19  
BARIUM 120 ppm CHROM HEX < 5  
CADMIUM 1.68 ppm SILVER < 5  
CHROMIUM < 5 ppm ZINC 1.72  
LEAD 6.11 ppm  
MERCURY < 0.2 ppm  
SELENIUM < 1 ppm  
NICKEL 2.85 ppm  
THALLIUM NA ppm

## \*\*ADDITIONAL ANALYTICAL INFO.\*\*

COLOR : BROWN  
LAYERS : SINGLE PHASED  
SPEC GRAV: 1.1 - 1.19  
ODOR : NONE  
FREE LIQ : NO  
CYANIDES : 1.38  
SULFIDES : 1  
PCB'S : NONE  
PHENOLICS: NONE

HANDLING

NO LANDBANS APPLY  
BULK SOLIDSPECIAL  
HANDLING  
SECTION





# MACK LABORATORIES<sub>INC.</sub>

Group: RMI Treatability  
Date Received: 11/17/89  
Date Sampled: 11/09/89  
Client No: 2219

Client: Mill Service, Inc.  
1815 Washington Road  
Pittsburgh, PA 15241-1498

Date: 12/11/89  
Page: 1

MLI Sample No.: 9  
Sample Name: Raw Waste

Parameters	Units	
<u>ASTM A Extraction</u>		
pH		10.35
Total Solids	mg/l	41300
Tot. Vol. Solids	mg/l	4310
Chromium -Hexavalent	mg/l	0.040
Ammonia	mg/l as N	1.21
Total Organic Carbon	mg/l	9.96
Chem. Oxygen Demand	mg/l as O <sub>2</sub>	269
Oil & Grease	mg/l	950
Phenols	mg/l	< 0.04

Approved by: NFH

Comments:

< - Less Than or Equal To

> - Greater Than

N/F - Not Flowing

NA - Not Available

2199 dartmore ave., • pittsburgh, pa. 15210 • phone (412) 885-2900





Group: RMI Treatability  
Date Received: 11/17/89  
Date Sampled: 11/09/89  
Client No: 2219

Client: Mill Service, Inc.  
1815 Washington Road  
Pittsburgh, PA 15241-1498

Date: 12/12/89  
Page: 1

MLI Sample No.: 10  
Sample Name: Raw Waste

Parameters	Units	
EP Toxicity		
Silver	mg/l	0.134
Arsenic	mg/l	< 0.04
Barium	mg/l	124
Cadmium	mg/l	0.023
Chromium	mg/l	< 0.007
Mercury	mg/l	0.0005
Nickel	mg/l	0.077
Lead	mg/l	< 0.07
Selenium	mg/l	< 0.04

Approved by: NFH

Comments:

< - Less Than or Equal To      > - Greater Than      N/F - Not Flowing      NA - Not Available

2199 dartmore ave., • pittsburgh, pa. 15210 • phone (412) 885-2900





# MACK LABORATORIES

Group: RMI Treatability  
Date Received: 11/17/89  
Date Sampled: 11/09/89  
Client No: 2219

Client: Mill Service, Inc.  
1815 Washington Road  
Pittsburgh, PA 15241-1498

Date: 11/17/89

Page: 1

MLI Sample No.: 8  
Sample Name: Raw Waste

Parameters	Units	
pH		11.53
Total Solids	mg/kg	918000
Tot. Vol. Solids	mg/kg	29500
Silver	mg/kg	2.64
Arsenic	mg/kg	1.1
Barium	mg/kg	695
Cadmium	mg/kg	1.43
Chromium	mg/kg	15.6
Copper	mg/kg	166
Mercury	mg/kg	0.02
Molybdenum	mg/kg	< 60
Nickel	mg/kg	6.50
Lead	mg/kg	20.9
Selenium	mg/kg	1.2
Zinc	mg/kg	351
Cyanide - Total	mg/kg	3.3
Reactive Cyanide	mg/kg	< 0.05
Reactive Sulfide	mg/kg	< 20
Oil & Grease	mg/kg	< 2.0
Phenols	mg/kg	2.56

Approved by: N/FH

Comments:

< - Less Than or Equal To

> - Greater Than

N/F - Not Flowing

NA - Not Available

2199 dartmore ave., • pittsburgh, pa. 15210 • phone (412) 885-2900



# Microbac

## Microbac Laboratories, Inc.

ERIE TESTING LAB DIV.  
2411 WEST 26TH STREET  
ERIE, PA. 16506  
(814)833-4790

PAGE 1

AIR • FUEL • WATER • FOOD • WASTES

### CERTIFICATE OF ANALYSIS

RMI COMPANY, SODIUM PLANT  
P.O. BOX 550  
STATE ROAD & EAST 6TH ST.  
ASHTABULA OH 44004  
ATTN: M.C.MILLER

DATE REPORTED 12/15/89  
DATE RECEIVED 11/16/89  
CUST P.O.# 3-78564  
CUST # 18044 ORDER NO 1701  
INVOICE NO 50145

SUBJECT : 2-SOLIDIFIED CELL BATH WASTE SAMPLES, 11/16/89

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
1	SORBOND LPC II EPA EXTRACT E.P. TOXICITY EXTRACT PREP		
	SILVER IN EXTRACT	<0.010	MG/L
	ARSENIC IN EXTRACT	0.004	MG/L
	BARIUM IN EXTRACT	77.8	MG/L
	CADMIUM IN EXTRACT	<0.005	MG/L
	CHROMIUM IN EXTRACT	0.015	MG/L
	MERCURY IN EXTRACT	<0.0002	MG/L
	LEAD IN EXTRACT	<0.05	MG/L
	SELENIUM IN EXTRACT	<0.0012	MG/L
	INITIAL PH OF EXTRACT	11.8	..
	FINAL PH OF EXTRACT	11.6 *	..
	CONCLUSION	SEE BELOW	...
	PROCEDURE SHEET ENCLOSED	ENCLOSURE	...
2	SORBOND PSB EPA EXTRACT E.P. TOXICITY EXTRACT PREP		
	SILVER IN EXTRACT	<0.010	MG/L
	ARSENIC IN EXTRACT	0.002	MG/L
	BARIUM IN EXTRACT	81.8	MG/L
	CADMIUM IN EXTRACT	<0.005	MG/L
	CHROMIUM IN EXTRACT	0.017	MG/L
	MERCURY IN EXTRACT	<0.0002	MG/L
	LEAD IN EXTRACT	0.051	MG/L
	SELENIUM IN EXTRACT	<0.0012	MG/L
	INITIAL PH OF EXTRACT	11.7	..
	FINAL PH OF EXTRACT	11.3 *	..
	CONCLUSION	SEE BELOW	...

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE





# Microbac

## Microbac Laboratories, Inc.

ERIE TESTING LAB DIV.  
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ERIE, PA. 16506  
(814)833-4790

PAGE 2

AIR • FUEL • WATER • FOOD • WASTES

### CERTIFICATE OF ANALYSIS

RMI COMPANY, SODIUM PLANT  
P.O. BOX 550  
STATE ROAD & EAST 6TH ST.  
ASHTABULA OH 44004  
ATTN: M.C. MILLER

DATE REPORTED 12/15/89  
DATE RECEIVED 11/16/89  
CUST P.O.# 3-78564  
CUST # 18044 ORDER NO 1701  
INVOICE NO 50145

SUBJECT : 2-SOLIDIFIED CELL BATH WASTE SAMPLES, 11/16/89

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
2	SORBOND PSB (CONT) PROCEDURE SHEET ENCLOSED	ENCLOSURE	...

SAMPLE #1 & 2: NO VIOLATIONS OF EP TOXICITY  
LIMITS FOR METALS.

\* SAMPLE #1: IN ACCORDANCE WITH THE EXTRACTION  
METHOD SW846, THE MAXIMUM AMOUNT OF ACID WAS USED  
WITHOUT OBTAINING THE PH OF 5.0 + 0.2.

\* SAMPLE #2: IN ACCORDANCE WITH THE EXTRACTION  
METHOD SW846, THE MAXIMUM AMOUNT OF ACID WAS USED  
WITHOUT OBTAINING THE PH OF 5.0 ± 0.2.

SIGNED

Lab. for use as a record states, easy to find, easy to use.  
EPA-EPA-NIOSH testing • Food Sanitation Consulting • Chemical and Microbiological Analyses and Research





# Microbac

## Microbac Laboratories, Inc.

ERIE TESTING LAB DIV.  
2411 WEST 26TH STREET  
ERIE, PA. 16506  
(814)833-4790

PAGE 1

*Sorbond  
evaluation  
(before S.O.H. treatment)*

AIR • FUEL • WATER • FOOD • WASTES

### CERTIFICATE OF ANALYSIS

RMI COMPANY, SODIUM PLANT  
P.O. BOX 550  
STATE ROAD & EAST 6TH ST.  
ASHTABULA OH 44004  
ATTN: MICHAEL MILLER

CUST # 18044

DATE REPORTED 11/01/89  
DATE RECEIVED 10/16/89  
CUST P.O.# 3-78564  
ORDER NO 557  
INVOICE NO 48708

SUBJECT : CELL BATH WASTE SAMPLE FOR TCLP ANALYSIS

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
-----------	----------------	--------	-------

1	CELL BATH WASTE, SOUTH CHUTE	10/11/89, TCLP EXTRACT	
	TCLP EXTRACT PREP		...
	SILVER IN EXTRACT	<0.010	MG/L
	ARSENIC IN EXTRACT	0.014	MG/L
	BARIUM IN EXTRACT	540	MG/L
	CADMIUM IN EXTRACT	0.013	MG/L
	CHROMIUM IN EXTRACT	0.017	MG/L
	MERCURY IN EXTRACT	0.0006	MG/L
	LEAD IN EXTRACT	<0.05	MG/L
	SELENIUM IN EXTRACT	<0.0012	MG/L
	CONCLUSION	SEE BELOW	...
	PROCEDURE SHEET ENCLOSED	ENCLOSURE	...

VIOLATES TCLP LIMIT FOR BARIUM.

SIGNER

*Paula W. ...  
QA Manager*







## *RMI Company*

SODIUM PLANT

P. O. BOX 550  
ASHTABULA, OHIO 44004  
216/997-5141 TWX 810-427-2937

September 28, 1989

Microbac Laboratories, Inc.  
Erie Testing Lab Division  
2411 West 26th Street  
Erie, PA 16506

Dear Sir:

Re: RMI Company Sodium Plant  
Cell Bath Waste-Annual Hazardous Waste Sampling and Analysis

Accompanying this letter is a one-quart sample of cell bath waste. To meet our annual hazardous waste sampling and analysis requirements, please perform the following:

1. EP toxicity for lead, cadmium, silver, chromium, barium, arsenic, selenium and mercury.
2. Paint filter test.

Also find attached a chain of custody form. If you have any questions or need additional information, please call me at 216-544-7802.

Sincerely,

A handwritten signature in cursive script that reads 'Michael C. Miller'.

M. C. Miller  
Sr. Engineer  
Environmental Affairs

MCM/rmw

cc: B. A. DiRienzo  
D. P. Korb  
B. L. Wright

Attachments



# Microbac

## Microbac Laboratories, Inc.

ERIE TESTING LAB DIV.

2411 WEST 26TH STREET

ERIE, PA. 16506

(814)833-4790

PAGE

1

AIR • FUEL • WATER • FOOD • WASTES

### CERTIFICATE OF ANALYSIS

RMI COMPANY, SODIUM PLANT  
P.O. BOX 550  
STATE ROAD 8 EAST 6TH ST.  
ASHTABULA OH 44004  
ATTN: MICHAEL MILLER

DATE REPORTED 10/23/89  
DATE RECEIVED 10/03/89  
CUST P.O.#  
ORDER NO 152  
INVOICE NO 48405

SUBJECT : CELL BATH WASTE SAMPLE FOR ANALYSIS, 10/3/89

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
-----------	----------------	--------	-------

1 CELL BATH WASTE SAMPLE 9/28/89, EPA EXTRACT

E.P. TOXICITY EXTRACT PREP

SILVER IN EXTRACT	<0.020	MG/L
-------------------	--------	------

ARSENIC IN EXTRACT	0.003	MG/L
--------------------	-------	------

BARIUM IN EXTRACT	450	MG/L
-------------------	-----	------

CADMIUM IN EXTRACT	<0.010	MG/L
--------------------	--------	------

CHROMIUM IN EXTRACT	<0.020	MG/L
---------------------	--------	------

MERCURY IN EXTRACT	<0.0002	MG/L
--------------------	---------	------

LEAD IN EXTRACT	<0.10	MG/L
-----------------	-------	------

SELENIUM IN EXTRACT	<0.0012	MG/L
---------------------	---------	------

INITIAL PH OF EXTRACT	10.9	" "
-----------------------	------	-----

FINAL PH OF EXTRACT	5.1	" "
---------------------	-----	-----

CONCLUSION	SEE BELOW	" "
------------	-----------	-----

PROCEDURE SHEET ENCLOSED	ENCLOSURE	" "
--------------------------	-----------	-----

2 CELL BATH WASTE SAMPLE 9/28/89, AS RECEIVED BASIS  
PAINT FILTER LIQUIDS EPA 9095 PASSES " "

VIOLATES EP TOXICITY LIMIT FOR BARIUM,  
LIMIT IS 100 MG/L.

SIGNED

*Paula Trapp*  
QA Manager

Laboratories serving states east of the Mississippi

USDA-EPA-NIOSH testing • Food Sanitation Consulting • Chemical and Microbiological Analyses and Research





# RMI Company

SODIUM PLANT

P.O. BOX 550  
ASHTABULA OHIO 44004  
216/967-5141 TWX 810-427-2937

## CHAIN OF CUSTODY RECORD

(PLEASE RETURN TO

PLANT UPON FINAL DISPOSITION OF SAMPLE)

COLLECTION SITE:

RMI Co. Sodium Plant South Chute Material

SAMPLE TYPE & DESCRIPTION:

Cell Bath Waste - South Chute Material

Perform EPR for Cr, Pb, Ni, As, Ba, Cd, Se, Hg, Ag

COLLECTOR'S SIGNATURE

Michael C. Miller

DATE SAMPLED

9/28/89

TIME(S) SAMPLED

7:45a.m.

PERTINENT FIELD INFORMATION (SAMPLE APPEARANCE,  
PRESERVATIVE, WEATHER, ETC.)

Sample is light brown, tan color with whitish chunks. Some  
surface moisture present due to hygroscopic nature of Cell Bath waste -  
No free liquids present in South Chute or in sample.

WAS SAMPLE RETAINED AFTER ANALYSIS?

YES

NO

DURATION?

INCLUDE DATE AND TIME OF ANALYSIS ON  
ANALYTICAL REPORT.

CHAIN OF POSSESSION:

1. Michael C. Miller

SIGNATURE

9/28/89

INCLUSIVE DATES

Senior Environmental Engineer

TITLE

Microbac Laboratories, Inc.

DISPOSITION

2. Joanne Maritzak

SIGNATURE

10/3/89

INCLUSIVE DATES

Office Mgr.

TITLE

Microbac Labs (Lab)

DISPOSITION

3. Jay Walter

SIGNATURE

10/3/89

INCLUSIVE DATES

QC Assistant Manager

TITLE

Microbac Lab

DISPOSITION

SIGNATURE

TITLE

INCLUSIVE DATES

DISPOSITION



# CERTIFICATE OF ANALYSIS

----- CORRESPOND TO ----- SAMPLE -----

HES QC Laboratory  
701 W Morris Street  
Indianapolis, IN 46231  
(317) 243-0811

EMS SAMPLE : H10942  
REPORT DATE : 05/18/89  
DATE RECEIVED : 04/28/89  
DATE COMPLETE : 05/17/89

----- REPORT TO ----- BILL TO -----

GILBERT COOK  
HERITAGE ENVIRONMENTAL SYSTEMS  
7901 WEST MORRIS STREET  
INDIANAPOLIS IN 46231

GILBERT COOK  
HERITAGE ENVIRONMENTAL SERVICES  
7901 W MORRIS STREET  
INDIANAPOLIS IN 46231

----- DESCRIPTION -----

CELL BATH WASTE  
RMI SODIUM PLANT  
P.O. NUMBER : 1

ASHTABULA, OH  
JMH

DATE : 02/21/89  
TIME : 13:51:16

TEST DESCRIPTION ANALYTE	RESULT	METHOD	DATE DET. LIMIT	ANALYST UNITS
CYANIDE, TOTAL .....	.....	EPA 335.3	05/12/89	HMS
CYANIDE, TOTAL .....	: ND		2.5	MG/KG
CHLORIDE .....	.....	SM 407A	05/08/89	KKR
CHLORIDE .....	: 300000		100000	MG/KG
SULFIDE .....	.....	EPA 376.2	05/12/89	JKP
SULFIDE, COLOR .....	: ND		5.0	MG/KG
CYANIDE, TOTAL AMENABLE TO CHLORINATION .....	.....	EPA 335.1	05/12/89	HMS
CYANIDE, AMENABLE .....	: ND		2.5	MG/KG
CYANIDE, TOTAL AQUEOUS EXTRACTABLE .....	.....	EMS G114.3	05/07/89	DAT
CYANIDE, TOT. AQ.EXT.....	: ND		0.01	MG/L
CYANIDE, AMENABLE ON AQUEOUS EXTRACT .....	.....	EMS G114.4	05/07/89	DAT
CYANIDE, AMEN AQ EXTRACT .....	: ND		0.01	MG/L
PERCENT SOLIDS, SOLUBILITY .....	.....	ASTM D2042	05/06/89	DAT
% SOLIDS SOLUB .....	: 92.7		0.01	%
pH S/S/S .....	.....	SW846-9045	05/07/89	DAT
PH .....	: 10.4		0.1	STD. UNITS
BARIUM, TOTAL .....	.....	SW846-7080	05/12/89	HHW
BARIUM, TOTAL .....	: 4100		250	MG/KG
INSTRUMENT .....	: IL S12 FAA			



TEST DESCRIPTION ANALYTE	RESULT	METHOD	DATE DET. LIMIT	ANALYST UNITS
CHROMIUM, TOTAL .....	SW846-7190	05/12/89	HHW	
CHROMIUM, TOTAL : 27		1.3	MG/KG	
INSTRUMENT : IL S12 FAA				
LEAD, TOTAL .....	SW846-7420	05/11/89	HHW	
LEAD, TOTAL : 260		5.0	MG/KG	
INSTRUMENT : IL S12 FAA				
SODIUM, TOTAL .....	SW846-7770	05/12/89	HHW	
SODIUM, TOTAL : 130000		2500	MG/KG	
INSTRUMENT : IL S12 FAA				
HEXAVALENT CHROMIUM .....	APHA 312.B	05/11/89	TLB	
HEX. CHROMIUM, COLOR : ND		0.5	MG/KG	
ACID DIGESTION IN S/S/S FOR ANALYSIS BY FAA OR ICPSW846-3050		05/08/89	LMT	
METALS, DIGEST : COMPLETE		NA	G	
INITIAL WT OR VOL : 2				
FINAL WT OR VOL : 50				

ND - Not Detected  
 NA - Not Applicable  
 BDL - Below Detection Limit

*Heritage Env. Inc.  
 Analysis of Cell  
 Bath Wash.  
 Note - total metal  
 content not EP.*

Approved by : H. A. Busch



R.M.I. SODIUM, - LABORATORY REPORT  
E.P. TOXICITY IN SORBOND TREATED SAMPLES FOR BaCl2.  
SAMPLE DATE - 2/2/89 SOUTH CHUTE. 4 12/89 CELL BATH A-3.  
REPORTING DATE - 4/22/89

\*\*\*\*\*

SOUTH CHUTE CELL BATH WASTE.

CONTROL SAMPLE	5% SORBOND ADDITION E.P. TOXICITY SAMPLE		METHOD OF ANALYSIS
1.09%	0.99%	BaCl2	A-A FLAME EMISSION
0.90%	0.74%	BaCl2	GRAVIMETRIC BaSo4 PRECIPITATE
0.88%	0.66%	BaCl2	GRAVIMETRIC BaCro4 PRECIPITATE

\*\*\*\*\*

CELL BATH SAMPLE A - 3

2.78%	2.69%	BaCl2	A-A FLAME EMISSION
2.65%	2.53%	BaCl2	GRAVIMETRIC BaSo4 PRECIPITATE
2.45%	2.34%	BaCl2	GRAVIMETRIC BaCro4 PRECIPITATE

\*\*\*\*\*

ANALYST

-----  
DWS

COPIES TO:M.C. MILLER & L.S. HANEK.  
SODIUM PLANT LABORATORY FILES.



# AWARE INCORPORATED

consultants in environmental management

CLIENT: RMI COMPANY

Report #08071

DATE RECEIVED: 9/14/88

AWARE SAMPLE DESCRIPTION		5572
CLIENT SAMPLE DESCRIPTION		CELL
		BATH WASTE
E.P. TOXICITY	DETECTION LIMITS	CONC
LEAD	0.50	1.53
CADMIUM	0.025	BMDL
SILVER	0.05	BMDL
CHROMIUM	0.25	0.31
BARIUM	2.5	104
ARSENIC	0.010	BMDL
SELENIUM	0.010	BMDL
MERCURY	0.002	BMDL
PAINT FILTER TEST	0	BMDL
INITIAL pH (UNITS)	----	9.0
FINAL pH (UNITS)	----	4.6

*the maximum concentration level in 100 mg/l.*

ALL RESULTS EXPRESSED IN PPM

ND = NONE DETECTED

BMDL = BELOW METHOD DETECTION LIMIT

DATE 11/11/88 BY D.L.D.



J. RICHARD WOHLER P.E.

# FREE-COL LABORATORIES

DIVISION OF FREEPORT BRICK COMPANY  
P.O. BOX 557, COTTON ROAD  
MEADVILLE, PENNSYLVANIA 16335  
PHONE (814) 724-6542



TO: RMI CO. SODIUM PLANT  
ATTN: MR. J. PETRARCA  
P.O. BOX 550, ST. RD. & E. 6TH  
ASHTABULA OH 44004

P.O. # 3-77614

ACCOUNT NO. 00704

## ANALYTICAL REPORT FORM

PARAMETER	SAMPLE ID	: CELL BATH	CELL BATH - SLUDGE CELL
		SCRAP	RMI 45
		RMI 46	EP LEACH
	LAB ID	80202252	80202263
	DATE RECEIVED:	02/02/88	02/02/88

BARIUM MG/L 9.50

CADMIUM MG/L 0.14

LEAD MG/L 1.36

EP LEACHATE PREP	X
EP LEACH.-INITIAL PH	10.5
EP LEACH.-FINAL PH	5.2
EP LEACH-ML ACID	13.00
EP LEACH.-GRAMS USED	100.31

A-17 SIC BAILER SAMPLE

pc: Joe Konopa - RMI Company

2/18/88  
jac

*Samuel J. Hart*  
QUALITY ASSURANCE OFFICER

AT - A Accreditation No. 96  
HEALTH, SAFETY & ENVIRONMENT  
PA Dept. of Health Clinical Laboratory Permit No. 00021  
PA Dept. of Agriculture No. 20007  
PA Dept. of Health Laboratory, D No. 10562  
PA Dept. of Health Laboratory, D No. 214 EPA Approval

NO Dept. of Health Permit No. 10002  
SC Dept. of Health Permit No. 00002  
NO Dept. of Health Permit No. 10002  
PA Dept. of Health Permit No. 10002  
PA Dept. of Agriculture  
Pennsylvania Accredited Laboratory  
PA Dept. of Health Permit No. 10002



# AWARE INCORPORATED

consultants in environmental management

CLIENT: RMI COMPANY  
DATE RECEIVED: 11-25-87

Report #07098  
P.O.#3-77218  
cc: J. Petrarca

Laboratory ID		12058	12059	12060	12061
SAMPLE ID					CELL
E.P. TOXICITY METALS	D/L	#23	#24	#25	BATH #26
Pb	0.500	BMDL	BMDL	BMDL	1.40
Cd	0.025	BMDL	BMDL	BMDL	BMDL
Ag	0.050	BMDL	BMDL	BMDL	BMDL
Cr	0.250	BMDL	BMDL	BMDL	BMDL
Ba	0.500	BMDL	BMDL	BMDL	416
As	0.050	BMDL	BMDL	BMDL	BMDL
Se	0.050	0.076	BMDL	0.073	BMDL
Hg	0.002	0.004	0.004	0.003	BMDL
PAINT FILTER TEST (ML/L)	1.0	----	----	----	BMDL

ALL RESULTS ARE EXPRESSED  
IN PPM UNLESS NOTED

D/L=DETECTION LIMIT  
BMDL=BELOW MINIMUM  
DETECTION LIMITS

DATE: 1/26/88

BY: D. Rick Davis





From the desk of...

JIM STEUDLER

Date 2/24/88

To Aware Samples

#23 Na-Receiver

24.158g / 500ml  $M_{20H}$

#24 Na-Container

27.243g / 500ml

#25 Na-product

28.102g / 500ml

#26 Cell Bath

per J. Petrusca  
x342



## TRI-STATE LABORATORIES, INC.

45 N. CANFIELD - NILES RD.  
AUSTINTOWN, OHIO 44515  
(216) 793-8800

Characterization  
of Cell Bath  
Waste

March 19, 1985

Mr. Joseph T. Holman  
RMI  
1000 Warren Ave.  
Niles, OH 44446

Dear Mr. Holman,

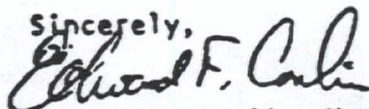
EP Toxicity Extraction per the Federal Register, Vol. 45 - No. 98, Monday,  
May 19, 1980, Book 2.

Lab I.D.  
Sample I.D.  
Received  
Sample Description

85031201  
Sodium Plant - South Chute Material  
3-12-85  
Dated 3-7-85 Time 15:05  
Sampled by B. Wright & J. Martin  
Single Phase - Solid

Arsenic, mg/l as As	0.026
Barium, mg/l as Ba	135
Cadmium, mg/l as Cd	0.060
Chromium, mg/l as Cr	0.03
Lead, mg/l as Pb	0.50
Mercury, mg/l as Hg	0.0057
Selenium, mg/l as Se	0.078
Silver, mg/l as Ag	0.08
Copper, mg/l as Cu	1.66
Nickel, mg/l as Ni	2.16
Zinc, mg/l as Zn	1.85

Sincerely,



Edward F. Conlin, Manager  
Water Ecology Division



## TRI-STATE LABORATORIES, INC.

45 N. CANFIELD - NILES RD.  
AUSTINTOWN, OHIO 44515  
(216) 793-8800

Characterization  
of Cell Bath  
Waste

March 19, 1985

Mr. Joseph T. Holman  
RMI  
1000 Warren Ave.  
Niles, Ohio 44446

Dear Mr. Holman,

EP Toxicity Extraction per the Federal Register, Vol. 45 - No. 98, Monday,  
May 19, 1980, Book 2.

Lab I.D.  
Sample I.D.  
Received  
Sample Description

85031202  
Sodium Plant - South Chute Material  
3-12-85  
Dated 1/15 - 1/18  
Sampled By Brian Wright & J. Martin  
Single Phase - Solid

Arsenic, mg/l as As  
Barium, mg/l as Ba  
Cadmium, mg/l as Cd

0.009  
205  
1.27

Chromium, mg/l as Cr  
Lead, mg/l as Pb  
Mercury, mg/l as Hg

ND (<0.03)  
4.76  
ND (<0.002)

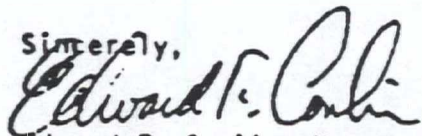
Selenium, mg/l as Se  
Silver, mg/l as Ag  
Copper, mg/l as Cu

0.119  
0.34  
5.48

Nickel, mg/l as Ni  
Zinc, mg/l as Zn

1.13  
1.13

Sincerely,

  
Edward F. Conlin, Manager  
Water Ecology Division



# TRI-STATE LABORATORIES, INC.

45 N. CANFIELD - NILES RD.  
AUSTINTOWN, OHIO 44515  
(216) 793-8800

Characterization  
of Cell Bath  
Waste

March 4, 1985

RMI  
1000 Warren Avenue  
Niles, OH 44446

Dear Joseph Holman:

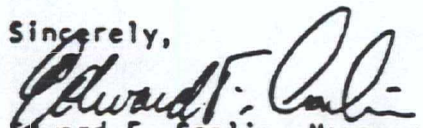
EP Toxicity Extraction per the Federal Register, Vol. 45 - No. 98, Monday,  
May 19, 1980, Book 2.

Lab. I.D.:	85021401
Sample I.D.:	Cell Bath Waste - Sodium plant
Received:	2/14/85
Sample Description:	Solid, Granular

## Final Concentration

Arsenic, mg/L as As	ND(<0.001)
Barium, mg/L as Ba	120
Cadmium, mg/L as Cd	1.68
Chromium, mg/L as Cr	ND(<0.03)
Lead, mg/L as Pb	6.11
Mercury, mg/L as Hg	ND(<0.1)
Selenium, mg/L as Se	ND(<0.001)
Silver, mg/L Ag	0.15
Copper, mg/L as Cu	3.19
Nickel, mg/L as Ni	2.85
Zinc, mg/L as Zn	1.72
Molybdenum, mg/L as Mo	ND(<0.1)
Antimony, mg/L as Sb	ND(<0.1)

Sincerely,

  
Edward F. Conlin, Manager  
Water Ecology Division

EFC/bh



# TRI-STATE LABORATORIES, INC.

RM1

45 N. CANFIELD - NILES RD.  
AUSTINTOWN, OHIO 44515  
(216) 793-8800

MARCH 4, 1985

ENVIRONMENTAL

CHEMICAL

WATER ANALYSIS

Lab No.	85021401		
Sample I.D.			
Date Received	2/14/85		
pH, Lab, S.U.	8.3		
Total Acidity as CaCO <sub>3</sub> , mg/1			
Total Alkalinity as CaCO <sub>3</sub> , mg/1			
Total Hardness as CaCO <sub>3</sub> , mg/1			
Calcium Hardness as CaCO <sub>3</sub> , mg/1			
Magnesium Hardness as CaCO <sub>3</sub> , mg/1			
Chlorides as Cl <sup>-</sup> , mg/1			
Sulfates as SO <sub>4</sub> <sup>-</sup> , mg/1			
Conductivity, umhos/cm at 25°C			
Total Solids, mg/1			
Suspended Solids, mg/1			
<del>Dissolved Solids, mg/1</del> Volatile Solids, %wt./wt.	3.16		
Cyanides as CN <sup>-</sup> , mg/1	1.38		
<del>Fluorides as F<sup>-</sup>, mg/1</del> Sulfide as S, mg/Kg	<2		
BOD, 5 day, mg/1			
COD, mg/1			
Dissolved Oxygen, mg/1			
Oil and Grease, mg/1			
Phenols as C <sub>6</sub> H <sub>5</sub> OH, ug/1			
Ortho Phosphate as P, mg/1			
Total Phosphate as P, mg/1			
Nitrate as N, mg/1			
Nitrite as N, mg/1			
Ammonia as N, mg/1			
Total Coliform Bacteria, colonies/100 ml			
Fecal Coliform Bacteria, colonies/100 ml			
Aluminum as Al, mg/1			
Arsenic as As, mg/1	ND(<0.3)		
Cadmium as Cd, mg/1	12.2		
Chromium as Cr, mg/1	84.6		
Hexavalent Chromium as Cr, mg/1			
Copper as Cu, mg/1	103		
Iron as Fe, mg/1			
Lead as Pb, mg/1	81.1		
Magnesium as Mg, mg/1			
Manganese as Mn, mg/1			
Mercury as Hg, mg/1	ND(<0.1)		
Nickel as Ni, mg/1	40.1		
Zinc as Zn, mg/1	152		
Sodium as Na, mg/1			
Barium as Ba, mg/Kg	3020		
Molybdenum, as Mo, mg/Kg	ND(<30)		
Silver, as Ag, mg/Kg	26.6		
Selenium as Se, mg/Kg	ND(<0.3)		
<sup>d</sup> Dissolved	ND = none detected	< = less than	
<sup>t</sup> Total	TNTC = too numerous to count	> = greater than	

*Edward F. Cole*



March 13, 1985

## WATER ANALYSIS

Michael Conley



# The Standard Testing Laboratory

A DIVISION OF THE STANDARD SLAG COMPANY

PHYSICAL • CHEMICAL • ENVIRONMENTAL

1200 STAMBAUGH BUILDING  
YOUNGSTOWN, OHIO 44501  
TELEPHONE 216-743-3151

December 8, 1983.

RESEARCH LABORATORY  
610 W. MAIN STREET  
CANFIELD, OHIO 44406

Mr. Joe Holman  
RMI  
1000 Warren Avenue  
Niles, Ohio 44446

Dear Mr. Holman:

EP Toxicity Extraction per the Federal Register, Vol. 45 -  
No. 98, Monday, May 19, 1980, Book 2.

Lab. I.D.: EP-164  
Sample I.D.: Cellbath Waste South Chute

Received: 11/11/83.  
Sample Description: Single Phase - Solid  
11/9/83. 10:10 J.T.H.

## Final Concentration

Arsenic, mg/L as As	0.066
Barium, mg/L as Ba	181
Cadmium, mg/L as Cd	<0.005
Chromium, mg/L as Cr	0.07
Lead, mg/L as Pb	0.36
Mercury, mg/L as Hg	<0.0001
Selenium, mg/L as Se	<0.040
Silver, mg/L as Ag	0.16

The Standard Testing Laboratory

*Edw. F. Conlin-wmt*  
Edw. F. Conlin, Chemist

WMT  
CC: Gene Hough



ENVIROLAB, INC.

Laboratory Report

October 18, 1980

	<u>S-146</u>
As mg/l	<0.5
Ba mg/l	150
Cd mg/l	0.66
Cr mg/l	0.13
Pb mg/l	0.27
Se mg/l	<0.5
Ag mg/l	0.20
Hg mg/l	<0.001

hm



EXHIBIT I: E. P. TOXICITY ANALYSIS OF CELL BATH WASTE

Envirolab Inc., Painesville, Ohio performed E. P. toxicity testing of a representative sample of RMI Company - Sodium Plant cell bath waste. Laboratory contact: Mr. Charles Hildebrick (216/352-8318). The results of the analysis are given below:

Laboratory Report of Sample No. S-146  
(October 18, 1980)

Arsenic	<0.5	mg/l
Barium	150	mg/l
Cadmium	0.66	mg/l
Chromium	0.13	mg/l
Lead	0.27	mg/l
Selenium	<0.15	mg/l
Silver	0.20	mg/l
Mercury	<0.001	mg/l

RMI Company  
Engineering Department  
April 4, 1983



B.1. (a.) ii. Solids 100%

(b.) N/A

(c.) N/A

(d.) pH 8.5

(e.) N/A

(f.) N/A

(g.) N/A

(h.) N/A

(i.) Arsenic <1 mg/kg

Note 1

Barium <0.2 to 4.0%

Cadmium <1 mg/kg

Chromium <1

\* Lead <1

Mercury <1

Nickel 3

\* Selenium <1

Silver <1

Copper 8 - 14

Molybdenum 1 - 20

\* Zinc <1

(j.) N/A

(k.) N/A

(l.) N/A

(m.) N/A

(n.) N/A

Other: Sodium Chloride 31 - 38%

Calcium Chloride 52 - 62%

Speedy Dri (R) 0 - 10%

\* The element was not analyzed; however, there is no reason to believe that it is present in excess of one mg/kg.

N/A - The constituent is not present or the characteristic is not applicable.

Note 1: Analysis performed by Arthur D. Little Company, analysis was performed on four representative samples of molten cell baths taken 4-27-79.

B.2. a. pH 8.5

b. N/A

c. N/A

d. N/A

e. N/A

f. Antimony - not analyzed

Note 2

Arsenic - <0.5 mg/l

Barium - 150 mg/l

Cadium - 0.66

Chromium - 0.13

Chromium (+6) - not analyzed

Lead - 0.27

Mercury - <0.001

Nickel - not analyzed

Selenium - <0.5



RMI CORP

Dear JOSEPH HOLMAN:

EP Toxicity Extraction per the Federal Register, Vol. 45 - No. 98,  
Monday, May 19, 1980, Book 2.

Lab. I.D.:

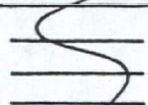
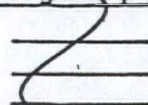
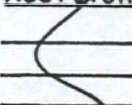
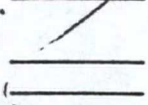
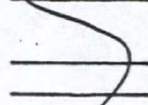
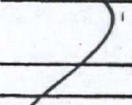
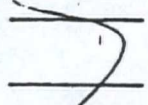
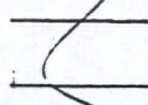
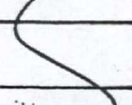
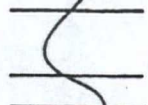
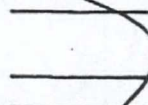
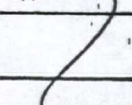
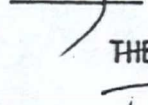
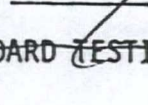
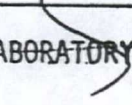
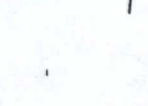

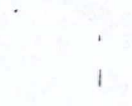
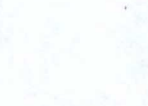
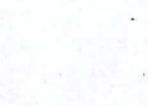

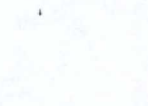
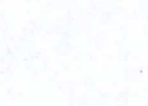
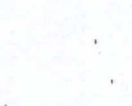



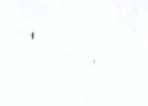

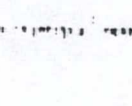
Sample I.D.:

Received:

Sample Description:

CELL BATH WASTE - SODIUM PLANT

SOLID, GRANULAR

	Final Concentration	<del>Using Aqueous</del> Standards	Recovery Of Single Spike	Multiple Standard Addition
Arsenic, mg/L as As	<u>ND(&lt;0.001)</u>			
Barium, mg/L as Ba	<u>120</u>			
Cadmium, mg/L as Cd	<u>1.68</u>			
Chromium, mg/L as Cr	<u>ND(&lt;0.03)</u>			
Lead, mg/L as Pb	<u>6.11</u>			
Mercury, mg/L as Hg	<u>ND(&lt;0.1)</u>			
Selenium, mg/L as Se	<u>ND(&lt;0.001)</u>			
Silver, mg/L as Ag	<u>0.15</u>			
<u>COPPER, mg/L as Cu</u>	<u>3.19</u>			
<u>NICKEL, mg/L as Ni</u>	<u>2.85</u>			
<u>ZINC, mg/L as Zn</u>	<u>1.72</u>			
<u>MOLYBDENUM, mg/L as Mo</u>	<u>ND(&lt;0.1)</u>			
<u>ANTIMONY, mg/L as Sb</u>	<u>ND(&lt;0.1)</u>			

THE STANDARD TESTING LABORATORY

wmt





P. O. BOX 269  
1000 WARREN AVENUE  
NILES, OHIO 44446-0269  
FAX 216/544-7796

February 16, 1996

EXPRESS MAIL

Adrienne LaFavre Ph.D.  
Ohio Environmental Protection Agency  
Northeast District Office  
2110 East Aurora Road  
Twinsburg, Ohio 44087

Re: Letter of January 16, 1996 to RMI Sodium Plant  
OHD 000 810 242 / #02-04-0584

Dear Dr. LaFavre:

RMI Titanium Company - Sodium Plant (RMI-SP) hereby responds to the above letter concerning Ohio EPA's visit to the Sodium Plant to gain familiarity with the Solid Waste Management Units (SWMUs) described in the Final Corrective Measures Study (CMS).

2. Waste Evaluation. OEPA requires clarification regarding submitted data. Was this sample (SE Corner, Area A) taken from the waste deposited at the edge of Pond No. 2?

RMI Response: The "SE Corner, Area A" sample was a surficial soil sample obtained on June 22, 1995 from the south-east corner of the old landfill (Area "A") and not from the edge of Pond No. 2 (see Attachment A). A split sample, labeled RMI #1, of solid residue from the corner of Pond No. 2 was taken with the OEPA on July 19, 1995, and RMI's results are included in Attachment B. As shown, the material is not a characteristic waste per the TCLP tests.

3. Condition of Area A. OEPA requests that RMI take measures this spring to repair the soil/vegetative cover.

RMI Response: RMI-SP will do the following this spring:

- a. add additional vegetative material to Area A's cover and regrade as necessary to maintain positive slopes;
- b. repair erosion damage and implement measures to prevent its reoccurrence; and
- c. seed and mulch as necessary to establish a vegetative cover across Area A.

**RECEIVED**  
FEB 21 1996  
OFFICE OF RCRA  
WASTE MANAGEMENT DIVISION  
EPA REGION V





**ATTACHMENT A**  
**COMPOSITE SOIL SAMPLE**  
**SOUTHEAST CORNER, AREA A**  
**JUNE 22, 1995**



**Microbac**

ERIE TESTING LAB  
1962 WAGER ROAD  
ERIE PA 16509  
(814) 825-8533

Page 1

AIR • FUEL • WATER • FOOD • WASTES

**CERTIFICATE OF ANALYSIS**

RMI COMPANY, SODIUM PLANT

P.O. BOX 330

ATTN: DOUG KORB

ASHTABULA

OH 44804

Date Reported 8/14/95  
Date Received 6/23/95  
Order No 9506-01473A  
Invoice No 041788  
Cust # 018044  
Sampled Date 6/22/95  
Sampled Time 15:30  
Sample Id

Permit No

Cust P.O. 3-BL 59092

Subject: COMPOSITE SOIL SAMPLE (SE CORNER, AREA A)

S#	TEST	METHOD	RESULT	UNITS	DATE	TIME	TECH
1	COMPOSITE SOIL SAMPLE, 6/22/95 @ 1530, SOUTHEAST CORNER, AREA A						
	BARITUM	SW046 6010 ICP	269	MG/KG	7/05/95	16:33	TAT
	SODIUM	SW046 6010 ICP	64,300	MG/KG	7/06/95	16:44	TAT
	CALCIUM	SW 046 6010	59,000	MG/KG	7/06/95	16:45	TAT
	CHLORIDES	SW046 9232	64,000	MG/KG	7/06/95	17:25	MCN

Certificate of Analysis Continued on next page

The data and other information contained on this, and other accompanying documents, represent only the sample(s) analyzed and is provided upon the condition that it is not to be reproduced wholly or in part for advertising or other purposes without written approval from the laboratory.

USDA-EPA-WQASH Testing Food Sanitation Consulting Chemical and Microbiological Analyses and Research





**ATTACHMENT B**

**ANALYTICAL RESULTS FOR SURFICIAL SOIL SAMPLES**

**July 1995 Samples**



#### **SAMPLE DESCRIPTION**

- RMI #1 - Southeast corner of Pond No. 2 in vicinity where waste was reportedly placed (RMI had previously removed the material); a surficial soil sample was collected from the bank.
- RMI #2 - Northeast corner of Area A; surficial soil sample primarily of white material existing as a thin layer on soil.
- RMI #3 - Ditch along north side of Area A; composite of surficial soil from the south bank and closer to the centerline of the ditch; soil collected in vicinity of well 4-S.
- RMI #4 - South side of Area A, near pipe expansion for aboveground pipeline; surficial sample of soil from bare spot under expansion and near property fence.



## ECKENFELDER INC.®

CLIENT: RMI Company #6497

DATE SAMPLED: 07/19/95

DATE RECEIVED: 07/20/95

DATE REPORTED: 08/08/95

ECKENFELDER SAMPLE NUMBER			3820	3821	3822	3823
CLIENT SAMPLE DESCRIPTION			RMI #1	RMI #2	RMI #3	RMI #4
TCLP METALS	DETECTION LIMITS	REGULATORY LIMITS	CONC	CONC	CONC	CONC
Arsenic	0.070	5.0	U	U	U	U
Barium	0.030	100	11	0.87	0.35	0.33
Cadmium	0.010	1.0	U	0.088	0.028	0.18
Chromium	0.050	5.0	U	0.17	U	U
Lead	0.050	5.0	0.050	0.15	U	0.13
Mercury	0.002	0.20	U	0.003	0.003	U
Selenium	0.050	1.0	U	U	U	U
Silver	0.010	5.0	U	U	U	U
TCLP Original pH (units)	NA	NA	12.0	7.6	7.7	8.0
TCLP Final pH (units)	NA	NA	11.8	5.1	5.4	5.6

ALL RESULTS EXPRESSED IN MILLIGRAMS/LITER  
UNLESS OTHERWISE NOTED.

U = BELOW DETECTION LIMITS

NA = NOT APPLICABLE

ALL SAMPLES WERE EXTRACTED AND/OR ANALYZED WITHIN  
USEPA HOLDING TIMES UNLESS OTHERWISE NOTED.

ECKENFELDER INC.

D. R. DAVIS

D. RICK DAVIS

VICE PRESIDENT/ANALYTICAL &amp; TESTING SERVICES

227 Herch Landing Drive  
Nashville, Tennessee 37228  
615.255.2288  
FAX 615.256.8332





# inter-office communication

RECEIVED

JAN 29 1993

TO: JULIANNE SOCHA, U.S. EPA *JIP*

FROM: ADRIENNE LA FAVRE *h* THROUGH FRANK POPOTNIK, DHWM, NEDO

SUBJECT: RMI TITANIUM COMPANY - SODIUM PLANT

DATE: January 25, 1993

---

OFFICE OF RCRA  
Waste Management Division  
U.S. EPA, REGION VI

Please find enclosed the information you requested:

1. November 13, 1990 letter from Richard Mason to Mark Bergman regarding wetting of waste;
2. Analytical results for soil samples.

I have also enclosed two additional documents which may be of interest or use to you:

1. RMI response to NOV, dated 9/16/91;
2. RMI's request for RCRA permit revision.

Let me know if we can be of further help.

ALF/fwn





RECEIVED

SEP 16 1991

OFFICE OF RCRA  
Waste Management Division  
U.S. EPA, REGION V.

P. O. BOX 269  
1000 WARREN AVENUE  
NILES, OHIO 44446-0269  
FAX 216/544-7796

September 10, 1991

Ms. Francine P. Norling  
Environmental Scientist  
5HR-13  
United States Environmental  
Protection Agency  
Region 5  
230 South Dearborn Street  
Chicago, IL 60604

Dear Ms. Norling:

Enclosed are two items:

- Laboratory Results for the soil sample collected at the south landfill area during your September 13, 1990 visit.
- A copy of the Request to Allow Size Reduction and Wetting - RCRA Permit Revision recently submitted to Ohio EPA.

As always, please call with any questions (216) 544-7688.

Sincerely,

A handwritten signature in dark ink, appearing to read "Richard L. Mason", is written over a light blue rectangular background.

Richard L. Mason  
Director  
Environmental Affairs

Enclosures

cc: D. R. Micsky



ECKENFELDER INC.

August 13, 1991

6120

Mr. Richard L. Mason  
Director of Environmental Affairs  
RMI Titanium Company  
1000 Warren Avenue  
Niles, OH 44446

Dear Rick:

Attached is a copy of the laboratory results for the soil sample collected on the landfill (Area A) at the RMI Sodium Plant, on September 13, 1990. The sample was collected near the southeastern corner of the landfill where some orange colored leachate was observed emanating from the landfill. The soil sample was analyzed for the 13 priority pollutant metals, iron, and manganese.

A summary of surficial soils metals data for the entire RMI Sodium site is located on Table 6-2 of the RCRA Facility Investigation (RFI) Report (June 1990). A comparison of these data with the September 1990 soil sample results can be made for eight metals including arsenic, cadmium, chromium, lead, mercury, nickel, selenium, and silver. For all eight metals, the September 1990 soil concentrations were less than the average metals concentrations for background and the landfill cap (Area A). In addition, the concentrations of antimony, beryllium, copper, thallium, and zinc in the September 1990 sample were less than those in surficial soil sample SS5-2 of the RFI. The RFI did not include iron and manganese analyses and, therefore, a comparison with the September 1990 sample can not be made.

If you have any questions or comments concerning this matter, please do not hesitate to call.

Sincerely,

ECKENFELDER INC.



William M. Liebe, P.G.  
Senior Hydrogeologist

cc: Jeffrey L. Pintenich, P.E.  
Laura A. Mahoney



ECKENFELDER INC.

CLIENT: RMI COMPANY #6120

DATE RECEIVED: 9/14/90

DATE REPORTED: 10/11/90

ECKENFELDER SAMPLE DESCRIPTION		6833
=====		
CLIENT SAMPLE DESCRIPTION		
		9/13
-----		
PRIORITY	DETECTION	
POLLUTANT METALS	LIMITS	CONC
-----		
ANTIMONY	10.0	BMDL
ARSENIC	0.25	10.2
BERYLLIUM	0.25	0.25
CADMIUM	0.25	BMDL
CHROMIUM	2.5	10.7
COPPER	1.0	14.2
LEAD	5.0	13.5
IRON	1.5	19,900
MANGANESE	0.50	492
MERCURY	0.2	BMDL
NICKEL	1.0	14.0
SELENIUM	0.25	BMDL
SILVER	0.50	BMDL
THALLIUM	5.0	BMDL
ZINC	0.25	53.8

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM (WET)  
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

NR = NOT REQUESTED

NA = NOT APPLICABLE

ECKENFELDER INC.

*D. Rick Davis*

D. RICK DAVIS

VICE PRESIDENT/ANALYTICAL & TESTING SERVICES



SEP 06 1991

Bob Ambrose, Manager  
Center for Exposure Assessment Modeling  
Environmental Research Laboratory  
960 College Station Road  
Athens, Georgia 30613-0801

5HR-13

RE: Request for Technical Review  
RMI - Sodium Plant  
Ashtabula, Ohio

Dear Mr. Ambrose:

This letter is to request the Environmental Research Laboratory, Athens, Georgia, to evaluate the significance of the potential for intermedia transfer of inorganic groundwater contamination to on-site surface water ditches at the RMI-Sodium Plant in Ashtabula, Ohio. The facility has conducted a RCRA Facility Investigation under a Federal RCRA permit. Releases of inorganic constituents to groundwater have been documented.

The RFI Report and Supplemental Report have been sent to Ron Wilhelm of your office under separate cover. The documents include the facility's calculations on the potential for intermedia transfer of inorganic groundwater contamination to surface water (Section 4.2.2 of the RFI report.) Please review these calculations to determine whether they are sufficient, or whether other models are recommended by the U.S. EPA for this purpose. We are concerned about this potential route of contaminant migration because the facility is in the watershed of Fieldsbrook, a brook with sediment contamination that has been designated a Superfund site, and which is located in a Great Lakes Area of Concern for Lake Erie. This evaluation is requested by September 23, 1991.

This request has been discussed with Jack Barnette, Region V Office of Research and Development Liaison. If you have any questions or require additional information, please call Francine Norling at (312) 886-6198. Thank you for your assistance.

Sincerely yours,

Lisa A. Pierard, Chief  
Ohio Section  
RCRA Permitting Branch

bcc: Jack Barnette  
Karl Bremer

CONCURRENCE REQUESTED FROM RPB			
OTHER STAFF	RPB STAFF	RPB SECTION CHIEF	RPB BRANCH CHIEF
<i>PAO</i> <i>09/04/91</i>	<i>JPN</i> <i>9/5/91</i>	<i>[Signature]</i> <i>9/6/91</i>	





*RMI Company*

RECEIVED

MAY 22 1990

OFFICE OF RCRA  
WASTE MANAGEMENT DIVISION  
EPA, REGION V

P. O. BOX 269  
1000 WARREN AVENUE  
NILES, OHIO 44446

May 19, 1990

Ms. Francine P. Norling  
U.S. Environmental Protection Agency, Region V  
230 South Dearborn St. (5 HR-13)  
Chicago, Illinois 60604

Subject: RCRA Facility Investigation  
RMI - Sodium Plant  
OHD 000 810 242

Dear Ms. Norling:

Ohio EPA was able to provide me with an analytical report for the 1981 leachate sample which we discussed in our meeting on May 9, 1990. The sample was collected by Ohio EPA from the ditch along the southern boundry of the RMI Sodium Plant on September 30, 1981. Enclosed is a copy of the report.

Sincerely,

A handwritten signature in black ink, appearing to read 'Richard L. Mason', written over a horizontal line.

Richard L. Mason  
Director  
Environmental Affairs  
(216) 544-7688

RLM:pb

Enclosure

cc W/Encl.

Mr. Jeff Pintenich  
Eckenfelder, Inc.



# Ohio Department of Health

Industrial Chemistry Section

## Environmental Sample Submission Report

Agency: OEPA

Division Program: HM-50

Analysis Reported To: ☐ CO ☐ CDO ☐ SE  
☒ NE ☐ SW ☐ NW

Laboratory: ☐ Central ☐ SE ☐ NE ☐ SW ☐ NW

Sample Number: HM57

Analyst: E. Stafford Supervisor: J. Green

Date Received: 10/2/81

Date Reported: 10/6/81

### Sample Identification

Station: RMT

ID Number: SC

Address: \_\_\_\_\_

City: \_\_\_\_\_ Zip: \_\_\_\_\_

County: Ashtabula Phone: \_\_\_\_\_

Collected By: Gary Gifford and Melinda Merry Add/Baker

Grab Sample Date or Beginning Date of Composite Sample—Use Military

Year Month Day Hour Minute  
8 1 0 9 3 0 1 1 3 0

Ending Date of Composite Sample—Use Military Time

Year Month Day Hour Minute CVT S/T  
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Field Treatment:

- ☐ Filtered ☐ CuSO<sub>4</sub> + H<sub>3</sub>PO<sub>4</sub>  
☒ Iced ☐ H<sub>2</sub>SO<sub>4</sub>  
☐ NaOH ☐ HNO<sub>3</sub>  
☐ Other (Explain) \_\_\_\_\_

Additional Information—Analyst Remarks—Non Routine Analytical Requests

### Radioisotopes

<input type="checkbox"/> Alpha, Total pc/l	P1501.
<input type="checkbox"/> Alpha, Diss pc/l	P1503.
<input type="checkbox"/> Alpha, Suspd pc/l	P1505.
<input type="checkbox"/> Beta, Total pc/l	P3501.
<input type="checkbox"/> Beta, Diss pc/l	P3503.
<input type="checkbox"/> Beta, Suspd pc/l	P3505.
<input type="checkbox"/> Barium 140, Total pc/l	P75030.
<input type="checkbox"/> Cesium-134, Total pc/l	P28414.
<input type="checkbox"/> Cesium-137, Total pc/l	P28401.
<input type="checkbox"/> Iodine-131, Total pc/l	P28301.
<input type="checkbox"/> Potassium-40, Total pc/l	P75038.
<input type="checkbox"/> Radium-226, Total pc/l	P9501.
<input type="checkbox"/> Radium-228, Total pc/l	P11501.
<input type="checkbox"/> Strontium-90, Total pc/l	P13501.
<input type="checkbox"/> Strontium-89, Total pc/l	P15501.
<input type="checkbox"/> Tritium pc/l	P7000.

### Pesticides

<input type="checkbox"/> Aldrin, Whl Sampl ug/l	P39330.
<input type="checkbox"/> DDD, Whl Sampl ug/l	P39360.
<input type="checkbox"/> DDE, Whl Sampl ug/l	P39365.
<input type="checkbox"/> DDT, Whl Sample ug/l	P39370.
<input type="checkbox"/> Dieldrin, Whl Sampl ug/l	P39380.
<input type="checkbox"/> Chlordane, Whl Sampl ug/l	P39350.
<input type="checkbox"/> Endrin, Whl Sampl ug/l	P39390.
<input type="checkbox"/> Heptachlor, Whl Sampl ug/l	P39410.
<input type="checkbox"/> Hchl-r-Epoxyde, Whl Sampl ug/l	P39420.
<input type="checkbox"/> Lindane, Whl Sampl ug/l	P39782.
<input type="checkbox"/> Methoxychlor, Whl Sampl ug/l	P39480.
<input type="checkbox"/> Malathion, Whl Sampl ug/l	P39530.
<input type="checkbox"/> Parathion, Whl Sampl ug/l	P39540.
<input type="checkbox"/> Methyl Parathn, Whl Sampl ug/l	P39600.
<input type="checkbox"/> Toxaphene, Whl Sampl ug/l	P39400.
<input type="checkbox"/> 2, 4-D, Whl Sampl ug/l	P39730.
<input type="checkbox"/> Silvex, Whl Sampl ug/l	P39760.
<input type="checkbox"/> BHC, Whl Sampl ug/l	P39340.
<input type="checkbox"/> Mirex, Whl Sampl ug/l	P39755.
<input type="checkbox"/> Diazinon, Whl Sampl ug/l	P39570.

### Volatile Organics

<input type="checkbox"/> Chloroform, Total ug/l	P32106.
<input type="checkbox"/> Methylene Chloride, Total ug/l	P34423.
<input type="checkbox"/> Carbon Tetrachloride, Total ug/l	P32102.
<input type="checkbox"/> Bromoform, Total ug/l	P32104.
<input type="checkbox"/> Bromodichloromethane, Total ug/l	P32101.
<input type="checkbox"/> Dibromochloromethane, Total ug/l	P32105.
<input type="checkbox"/> 1, 2-Dichloroethane, Total ug/l	P32103.
<input checked="" type="checkbox"/> Trichloroethylene	1.4% (w/v)
<input checked="" type="checkbox"/> Tetrachloroethylene	1.0% (w/v)
<input checked="" type="checkbox"/> Tetra chloroethane	29.3% (w/v)

### Special Parameters

<input type="checkbox"/> PCB, Whl Sampl ug/l	P39516.
<input type="checkbox"/> Chlorophyll "A" ug/l	P32209.
<input type="checkbox"/> Phenols ug/l	P32730.
<input type="checkbox"/> Sample Purpose	P71999.
<input type="checkbox"/> Sample Code	P115.
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

Distribution: 1—Data Processing 2—Central Office 3—District Office 4—Owner 5—Laboratory





Re: HMM  
RMI  
Ashtabula County

Mr. Joe Holman  
Staff Environmental Engineer  
RMI Company Sodium Plant  
P.O. Box 550  
Ashtabula, Ohio 44004

October 15, 1981

Dear Mr. Holman:

This letter is written to confirm our meeting of September 30, 1981, at the Sodium Plant in Ashtabula. RMI was represented by you, Mr. Bernard Wilkens, Mr. O. Berteau, Mr. Larry Hanek and Mr. George Hakkio. Ohio EPA was represented by Gary Gifford, Chris Khourey and I. The subject of this meeting was the leachate outbreaks in the newly constructed ditch on the south side of the RMI's property.

You, Larry Hanek, Chris Khourey, Gary Gifford and I inspected the ditch at about 11:30 AM. We found several pools of a dark red liquid in the bottom sediments of the ditch. There was a strong odor, like that of chlorinated organics, in the area. Gary Gifford and I sampled this material by pipetting the leachate into an uncontaminated glass sampling jar supplied by the Ohio Department of Health. RMI's lab supplied the uncontaminated glass pipett. The sample was iced and locked in my car.

We reconvened at about 1:30 PM to discuss the leachate. RMI proposed lining the entire ditch with two feet of compacted clay in an attempt to prevent the contaminated leachate from surfacing. Also, RMI proposed raising the gradient of the ditch to transform the ditch into a gentle swail which would still carry runoff away from the closed landfill.

We also discussed the history of RMI's site. When RMI purchased the property there was a farmhouse on it. It is believed that there was a water well on site at that time. RMI has manufactured only sodium metal and chlorine at this site. At this time there seems to be no evidence linking RMI to the contaminated leachate. We will continue to investigate the source of this contamination.

The sample of leachate was split with RMI after the meeting.

We have no objection to RMI's proposal for preventing the leachate breakout. We appreciate RMI's concern for this situation and the precautions which



RMI Company Sodium Plant  
October 15, 1981  
Page - 2 -

were taken to prevent surface water pollution. Our sample of leachate has been received by the Ohio Department of Health Laboratories for analysis. We will inform you of the results as soon as we receive them.

Sincerely,

*Melinda Merryfield-Becker*

Melinda Merryfield-Becker  
Solid Waste Scientist

MMB:mjo

cc: Ed Glod, C.O.  
Bill Skowronski, NEDO



A.T. Kearney, Inc.  
699 Prince Street  
P.O. Box 1405  
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January 15, 1987

**ATKEARNEY**

Mr. Ken Burch  
Regional Project Officer  
U.S. Environmental Protection Agency  
230 South Dearborn Street  
Chicago, IL 60604

Reference: EPA Contract No. 68-01-7038; Work Assignment No.  
R05-02-33; Draft Sampling Plan for the RMI Sodium  
Plant, Ashtabula, Ohio

Dear Mr. Burch:

Enclosed please find the draft sampling plan for the above referenced facility. Please have Francine Norling, the Technical Monitor, review and comment on the plan. Steve Phillips, the Work Assignment Manager (WAM), will call Francine next week to discuss her schedule for reviewing the plan and to discuss a schedule for the sampling.

An estimate for the analytical costs for this sampling plan has been included as an attachment to the sampling plan.

If you have any questions, please feel free to call me or Steve Phillips (who can be reached at 713/789-8050).

Sincerely,

*John Donley / JKD*  
John Donley  
Technical Director

Enclosure

cc: F. Norling, EPA Region V  
L. Pierard, EPA Region V  
D. Beasley  
J. Grieve  
G. Kline  
S. Phillips, HLA-H  
M. Unger, KWB



**DRAFT**

DRAFT SAMPLING PLAN FOR  
THE RMI SODIUM PLANT  
ASHTABULA, OHIO

Prepared for:

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EPA Contract No. 68-01-7038  
Work Assignment No. R05-02-37

January, 1987



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## PROJECT MANAGEMENT

The various components of the RFA performed on the RMI Sodium Plant in Ashtabula, Ohio are illustrated in the flow chart on the following page. Region V personnel conducted the PR and VSI. A. T. Kearney provides overall management of the technical personnel comprising the SV team, which includes a field sampling team from Harding Lawson Associates, a Lee Wan Laboratory analytical team, and a field sampling quality control officer from K. W. Brown and Associates. In addition, the RFA sampling team will include representative(s) from the associated regulatory agencies.

All personnel participating in sampling will have training and experience in proper sampling procedures, documentation, and safety, specific for the RFA Program.

Personnel on-site for sampling episode will include:

E. Gray	- Sampling Team Leader
J. Hofbauer	- Sampling Technician
M. Unger	- Field Sampling QC Officer



## 1.0 INTRODUCTION

The RMI-Sodium Plant is an approximately 50 acre site located on State Road, 3/4 mile south of Lake Erie near the town of East Ashtabula, Ohio (see Figure 1). The facility has been in use from 1950 to the present and produces metallic sodium and chlorine gas from spent brine solutions. Hazardous wastes generated at the facility include sulfuric acid, spent cell bath (contaminated with barium, lead and cadmium) and metallic sodium/calcium residue.

The spent cell bath was placed in an on-site landfill from 1950 to 1980. These wastes are presently stored in an enclosed waste pile. Sulfuric acid which is not recycled is neutralized in the on-site wastewater treatment system. The metallic sodium/calcium residue is incinerated in a burn room.

During capping activities at the landfill, a leachate seep was found next to the railroad tracks at the south end of the plant. Analysis of the leachate revealed trichloroethylene (TCE), trichloroethane (TCA), and tetrachloroethylene.

The U.S. EPA and Ohio EPA visited the facility in June 1986. During the visit, leachate was observed seeping out of the landfill cap. A white powder was observed at several spots on top of the cap and also near the cooling tower.

Based on the results of the preliminary review (PR) and visual site inspection (VSI) conducted by EPA Region V staff, EPA has determined that four SWMUs require sampling and are to be included in the sampling visit (SV) for the facility.

## 2.0 SAMPLING OBJECTIVES

The objectives of the SV are to provide information to allow EPA to make an initial determination regarding the potential for release of hazardous waste or hazardous constituents from the identified SWMUs and other areas of concern. The results of the SV are intended to be used to support the decisions regarding the need for further action at the facility.

The SV is directed to the SWMUs and other areas of concern where a release is suspected based on the results of the PR and VSI. The data generated from the SV provides only a "snapshot"



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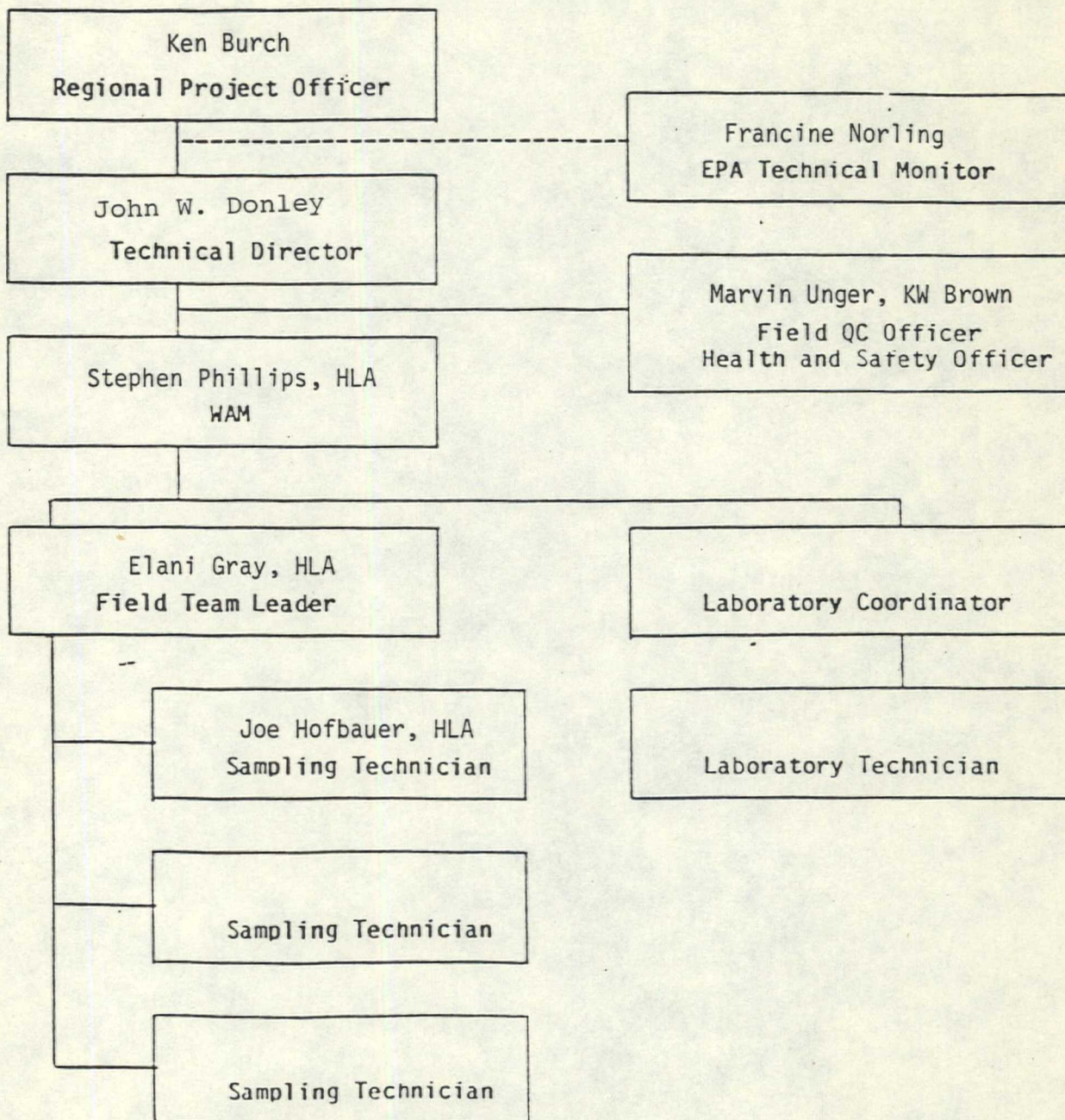
ROAD CLASSIFICATION

Figure 1



Organizational Chart  
for the  
RMI RFA SV

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of the conditions during the time of the sampling. Because of the biased approach of the SV, the results are in no way intended to represent a detailed characterization of contamination at the facility nor to lead to a statistical inference.

### 3.0 SAMPLING APPROACH

Soil samples will be collected from two SWMUs (closed landfill and area around the cooling tower) where EPA has determined there is a high potential for release to this medium due to observed white powder on the ground near these units. Surface soil samples will be collected beneath selected areas of the white powder.

The closed landfill was observed during the VSI to have leachate seepage and possible releases to the ditch near the unit. Samples of the leachate and the ditch water will be collected. Additionally, water samples will be collected from selected wastewater treatment surface impoundments to further characterize the waste. Sediment samples will be collected from the East Pond and from selected wastewater treatment surface impoundments to further characterize the sludges in these units.

No groundwater samples will be collected as part of this SV.

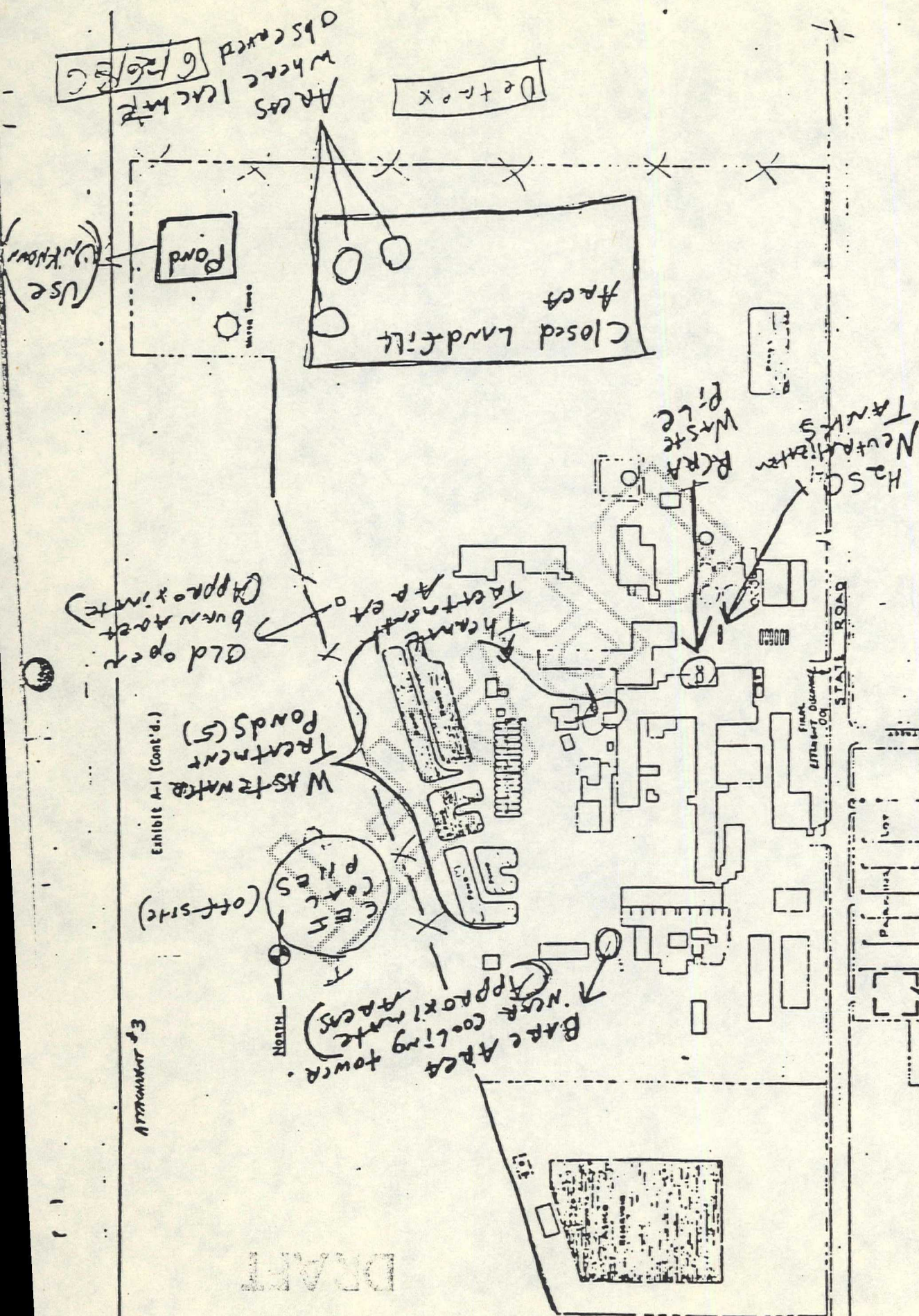
### 3.1 SAMPLING LOCATIONS

Samples will be collected at the closed landfill, the area around the cooling tower, the pond east of the landfill, and the wastewater treatment surface impoundments. Additionally, background samples will be collected, as described below. Sampling locations are presented in Figure 2 and summarized in Table 1.

#### 1. Closed Landfill

The closed landfill, which was active from 1950 to 1980, was used for the disposal of a variety of wastes including organics, acids, metal sludges, and cell bath waste contaminated with barium, cadmium, and lead (2). During capping of the site, volatile organic compounds (VOCs) were detected in a leachate seep (1).







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Table 1  
Sampling Locations, Density, and Analysis Parameters

Location	Sample Medium/Type	No. of Sampling Points	Depth	Analysis Parameters
Closed Landfill	Leachate/grab	3	--	metals, VOCs
	Soil/composite	1	3-4 in.	metals, VOCs
	Water/grab	1	--	metals, VOCs
Cooling Tower	Soil/composite	1	3-4 in.	metals
East Pond	Sediment/grab	3	--	metals, VOCs
Wastewater treatment surface impoundments	Water/grab	2	--	metals, VOCs
	Sediment/grab	3	--	metals, VOCs
Background	Soil/composite	2	3-4 in.	metals, VOCs
	Water/grab	1	--	metals, VOCs
Trip Blank	--	1	--	metals, VOCs
Field Blank	--	1 per day of sampling	--	metals, VOCs

\*For the analytical parameters, metals refers to the EP toxicity metals and VOCs refers to the volatile organic fraction of the priority pollutants.



During the VSI, leachate was observed seeping from the cap and a white powder was observed on the landfill soil surface (see Figure 2). (1) There is a ditch running along the perimeter of the landfill.

Sampling of this unit will consist of the following:

Leachate (if present)	- maximum 3 samples
Landfill surface	- 1 composite soil sample (below white powder)
Ditch water	- 1 sample

Since waste containing metals has been disposed of in the landfill, and VOCs were previously reported in a leachate seep (2), the leachate and ditch water samples will be analyzed for EP toxicity metals and VOCs. The soil sample on the landfill surface will be analyzed for EP toxicity metals, as the powder is believed to be contaminated with heavy metals.

## 2. Cooling Tower

During the VSI, an area of dead vegetation was observed near the plant cooling tower. Within this bare area, a white powder was observed on the soil surface. One composite soil sample will be taken of this area. This sample will be analyzed for EP toxicity metals, as the powder is believed to be contaminated with heavy metals.

## 3. Pond East of the Landfill

This pond is located east of the closed landfill. Although the exact use of the pond is not known, it is expected that it was used for the disposal of wastes similar to those disposed in the landfill. Three sediment samples will be taken from the pond. The samples will be analyzed for the same parameters as the samples from the closed landfill, i.e., EP toxicity metals and VOCs.

## 4. Wastewater Treatment Surface Impoundments

There are five wastewater treatment surface impoundments at the facility. These impoundments receive discharges from various areas of the sodium and chlorine operations. (1, 2)



There are two ponds which initially receive discharges from the plant. One sediment (sludge) sample will be taken from each of these ponds. An additional sediment sample will be taken from the first pond downstream of these two ponds. Two water samples will be taken from selected surface impoundments. The exact impoundments to be sampled for water will be determined during the SV with approval of EPA. All samples will be analyzed for EP toxicity metals and VOCs based on the types of wastes handled in these units.

No factors have been identified which might influence the sequence of sample collection. The collection of samples will be based on the judgment of the sampling team in consideration of the most efficient and effective route.

### 3.1.1 Identification of Sampling Points

Specific sampling points will be identified in the field by the sampling team. Sampling points will be identified on the basis of observed soil conditions, environmental effects (e.g. stressed or absent vegetation), environmental conditions (e.g., landscape setting, release pathways, and location relative to SWMUs), and drainage patterns.

Leachate samples at the closed landfill will be collected only if leachate seeps are observed during the SV. Samples will be collected as close to the origin of the seep as practical. The ditch water sample will be collected at a point based on visual observation.

Soil samples at the closed landfill and cooling tower will be collected at areas beneath where the white powder is observed. If not present, samples will be collected in those areas most likely to be contaminated as determined by the sampling team.

Sediment samples from the East Pond and from the wastewater treatment impoundment will be collected from the unit itself. Water samples from the treatment impoundments will be collected from units based on visual observation.

### 3.1.2 Sampling Media

The media to be sampled include surface soil, water, and sediments. Leachate will be sampled only if seeps are observed during the SV.



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### 3.1.3 Sampling Density

The sampling density for the identified locations is presented in Table 1 and was determined by EPA. The number of sampling points per location is based on the relative size of the area and observations made by EPA during the VSI. Additional sampling points may be identified by the sampling team in the field based on site conditions and visual observations. The collection of additional samples will be subject to approval by EPA.

### 3.1.4 Sampling Depth

Soil samples will be collected from the surface where the white powder is observed. EPA has determined that no deep samples are required as part of this SV.

### 3.1.5 Location of Background Sampling Areas

Two background soil samples will be collected from areas of the facility that should be free of contamination. A background surface water sample will be collected upstream from the facility. Specific locations will be determined by visual observation with approval by EPA.

### 3.1.6 Special Presampling Preparation

No special presampling preparation is required for RMI.

## 3.2 EQUIPMENT STORAGE PRIOR TO USE

Sampling equipment that has been decontaminated and not scheduled for additional use will be sealed/stored in a clean environment following drying/cooling to prevent any accumulation of dust or other contaminants. In addition, sampling containers and other sampling tools will be stored so as to prevent contamination (i.e., inverted or capped with aluminum foil).

## 4.0 SAMPLE COLLECTION PROCEDURES

The sample collection procedures for the SV are described in this section. All procedures are in accordance with EPA protocol and the EPA Region V QAP. The sampling methodologies were selected based on the sample types, conditions at the site, and considering practicality and safety.



#### 4.1 RECORDKEEPING

Recordkeeping procedures for the sample collection activities will involve detailed documentation of all procedures using a field logbook and photographs, and preparation of chain-of-custody forms and field tracking records. All original forms, data, and other project documentation will be placed in the Kearney Team project file, and will be readily accessible to EPA Region V. A more detailed description of the documentation requirements and procedures is presented in Section 5.0.

#### 4.2 SOIL SAMPLING

##### 4.2.1 Soil Sampling Procedures

Samples of surface soils will be collected directly below the specified areas where the white powder is observed. Samples will be collected using an aluminum or hard plastic scoop. The following procedures will be used:

1. Carefully remove the white powder layer with a spade or similar tool to expose the soil surface.
2. Using the scoop, collect 1/3 of the required quantity of soil, needed to fill the sample container, to the specified depth (i.e., upper 3-4 inches).
3. As each scoop of soil is collected, place the soil in the sample container.
4. After the required quantity is collected, thoroughly mix the soil in the sample container to composite the sample.
5. Repack the hole with remaining excavated soil. If the volume of excavated soil is not sufficient to fill the hole, collect the required fill volume from a similar soil type from an unaffected area.

##### 4.2.2 Soil Sampling Quality Control

Detailed information will be collected during the sampling operation. The information recorded will include exact depth of surface sample, texture of soils sampled, and any discolorations or odors observed during the sampling activities.



#### 4.2.3 Special Considerations

Soil samples will be collected from areas beneath the white powder which was observed by EPA during the VSI. If the white powder is not present at the time of the SV, samples will be collected at points identified by the sampling team and approved by EPA.

#### 4.3 WATER AND SEDIMENT SAMPLING

##### 4.3.1 Water and Sediment Sampling Procedures

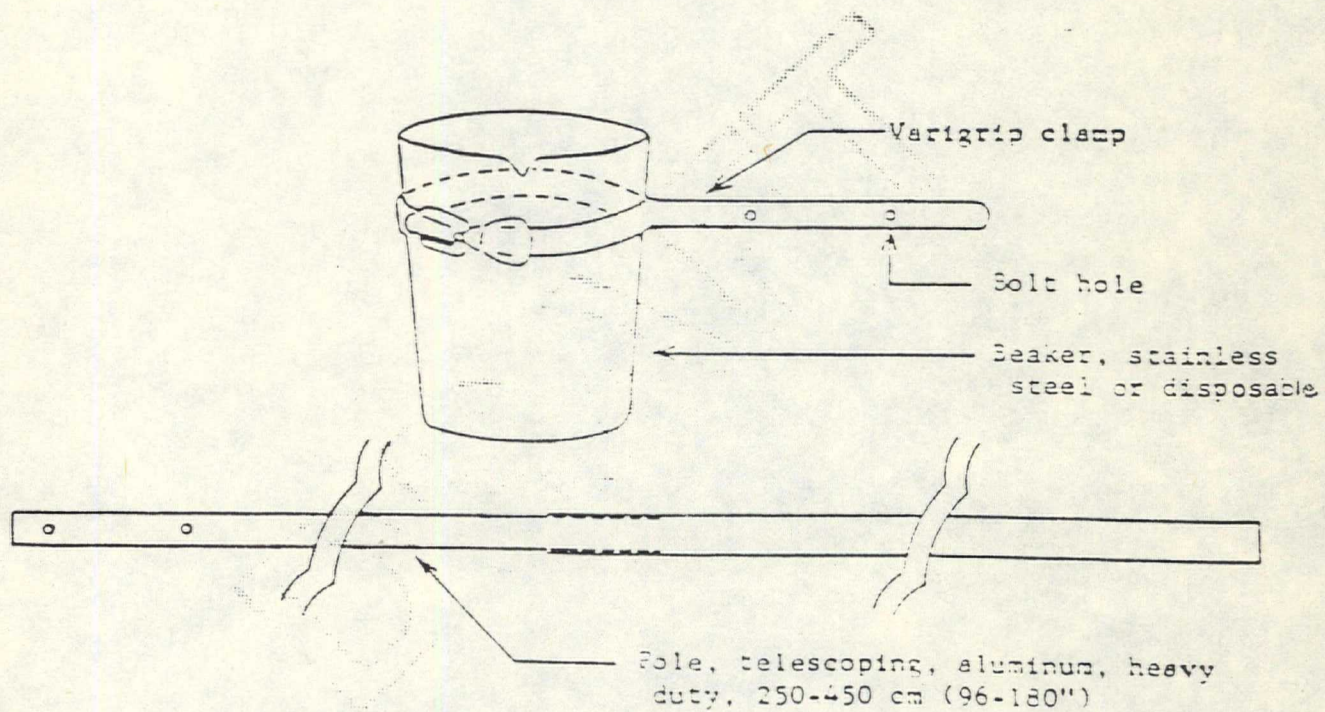
Water and sediment samples will be collected using a pond sampler device as illustrated in Figure 3. The pond sampler consists of an adjustable clamp attached to the end of an aluminum pole. A clamp is used to secure a sampling beaker. Samples will be collected in the following manner:

1. Assemble the pond sampler. Make sure that the sampling beaker and the bolts and nuts that secure the clamp to the pole are tightened properly.
2. With proper protective garment and gear, take grab samples by slowly submerging the beaker with minimal surface disturbance. For sediment samples, scoop the sediment from the bottom of the unit.
3. Retrieve the pond sampler with minimal disturbance.
4. For water samples, remove the cap from the sample bottle and slightly tilt the mouth of the bottle below the beaker edge. Empty the beaker slowly, allowing the sample stream to flow gently down the side of the bottle with minimal entry turbulence. Continue delivery of the sample until the bottle is almost completely filled.
5. For sediment samples, decant excess water. Place sample on foil-lined tray and divide sample into the required aliquots using a lab scoop. Place sample into the appropriate containers.



Figure 3

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#### 4.3.2 Water and Sediment Sampling Quality Control

1. Water samples will be collected in a manner which ensures minimal agitation of sediment layers and/or alteration of the sample.
2. Color, odor, or turbidity of the surface water or sediment sample will be recorded.

#### 4.3.3 Special Considerations

Because the flow in the ditch is intermittent, a sample will be collected only if water is present in the ditch during the SV. In addition, leachate samples will be collected only if seeps are observed.

#### 4.4 SAMPLE CONTAINERIZATION AND LABELING

##### 4.4.1 Containers

The sample containers for the RMI SV will be supplied by the analytical laboratory. Sample containers will be prepared by the laboratory with the appropriate preservatives.

Samples will be placed in the appropriate containers at the time the sample is collected. The containers to be used for the RMI Sodium Plant are shown in Table 2.

##### 4.4.2 Sample Labels

Each sample container will be clearly labeled with the following information:

- o Sample location
- o Sample identification code (unique number)
- o Parameter to be analyzed
- o Sample type
- o Name/signature of collector
- o Date of collection.



Table 2

## Sample Containers for the RMI SV

<u>Sample Type</u>	<u>Analysis Parameter</u>	<u>Sample Container</u>
Soils	Metals	8 oz. wide mouth glass jar
Sediments	Metals	8 oz. wide mouth glass jar
	VOCs	120 ml wide mouth glass vial
Water	VOCs	40 ml glass vial
	Metals	1-liter plastic bottle



dedicated area (e.g., pickup truck, plastic sheet) will be established at each sampling location to prevent contaminated media from coming in contact with any sampling tools or equipment.

#### 4.6.1 Equipment Decontamination

All sampling equipment used for the RMI SV will be dedicated. If it becomes necessary to decontaminate equipment in the field, the following procedures will be used:

1. Remove loose debris with a brush or cloth
2. Rinse with tap water
3. Scrub with a nonphosphate detergent wash using a soft-bristle brush;
4. Rinse with tap water;
5. Rinse thoroughly with distilled/deionized water
6. Allow to dry thoroughly in a clean environment
7. Wrap in plastic and seal with tape.

#### 4.6.2 Disposal of Contaminants

Prior to the SV, the owner/operator will be contacted by EPA to establish on-site decontamination/disposal protocols. Contaminated sampling equipment and tools will be cleaned and cleaning materials disposed on-site as directed by the facility. The volumes of dislodged contaminated residues should not require any special disposal considerations and will be collected and disposed of on-site.

#### 5.0 FIELD SAMPLING QUALITY ASSURANCE AND QUALITY CONTROL

Field sampling quality assurance and quality control will be in accordance with the EPA Region V QAP. Any deviations from the QAP will require approval by the EPA Technical Monitor and will be documented in the field notebook along with the justification for the deviation.



## 5.1 REPRESENTATIVENESS

Sample point selection, as described in Section 3.1.1, will be based on information obtained during the PR and VSI, input from EPA, and visual observations of the sampling team during the SV. This selection strategy should ensure the representativeness of samples.

## 5.2 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) SAMPLES

The QA/QC for samples will be in accordance with the Region V QAP. The following sample blanks will be collected in order to verify that the sample collection and handling processes have not affected the quality of the samples:

1. Trip blanks;
2. Field blanks;
3. Equipment blanks.

All blanks will be collected, stored, and analyzed as outlined in the Region V QAP.

### 5.2.1 Trip Blanks

One set of trip blanks will be prepared for each set of parameters to be analyzed. For the RMI SV, a trip blank will be prepared for each fraction of the VOAs and metals.

### 5.2.2 Field Blanks

One set of field blanks will be prepared for each set of parameters to be analyzed. For the RMI SV, a field blank will be collected for each type of analysis as described in 5.2.1. One field blank will be collected for each day of sampling.

### 5.2.3 Equipment Blanks

One equipment blank will be prepared for each sample collection device used during the RMI SV and will be analyzed for the VOAs and metals.



## 5.3 CHAIN-OF-CUSTODY

Chain-of-custody procedures, as defined in the Region V QAP, will be followed during the RMI SV. The Kearney Team's standard chain-of-custody will be maintained as samples are collected. EPA approved chain-of-custody records will be completed prior to transport of samples.

## 5.4 FIELD LOGBOOK

The field logbook will contain all pertinent SV information, and field observations. This information will include descriptions of the SWMU being sampled and any factors or conditions which might affect sampling procedures (prevailing weather, sampling terrain, etc.). Sampling methods detailed in this sampling plan are to be strictly adhered to. Deviations or additions to this plan will be carefully documented in the field logbook. Photographs will be logged in the notebook and labeled when developed. All routine measurements and observations that are derived will be recorded in the field logbook, including sampling blanks, static water depths, borehole volumes, soil core descriptions, and pertinent colors or odors.

## 5.5 DOCUMENTATION OF SAMPLING LOCATIONS

Whenever samples are collected, the location from which the sample was taken will be verified. Photographs will be used to document sampling sites and to verify any written descriptions entered in the field logbook. If appropriate, the method of triangularization will be used in conjunction with permanent structures or other benchmarks to document sampling locations.

## 6.0 HEALTH AND SAFETY PLAN

Prior to beginning the sampling activities, the RMI-Sodium Plant facility's medical emergency plan will be reviewed by the sampling team. The location and phone number of the nearest medical facility and the phone number of the local ambulance service will be recorded for use in an emergency.

## 6.1 POTENTIAL HAZARDS

The following categories of potential hazards may be associated with this sampling activity:

1. Chemical hazards from exposure to waste and contaminated soil and water



2. Mechanical hazards associated with hand sampling equipment
3. Low temperature hazards from working in ambient temperatures below 40°F.

## 6.2 PROCEDURES AND EQUIPMENT TO MITIGATE HAZARDS

The following procedures and equipment will be used to mitigate the hazards identified above:

### 1. Chemical Hazards

Hazards associated with chemical exposure will be mitigated by the use of personal protective equipment. Level of protection will be a modified Level C, consisting of the following equipment:

- o Hard hat
- o Tyvek coveralls
- o Latex gloves
- o Steel toe boots
- o Latex boot covers
- o Full face or half face, twin-cartridge respirator equipped with organic vapor/dust, fume, mist cartridges (only if indicated by air monitoring).

### 2. Mechanical Hazards

Mechanical hazards associated with hand sampling equipment will be mitigated through use of standard safety practices for the construction industry.

### 3. Low Temperature Hazards

If sampling is performed at ambient temperatures below 40°F, hypothermia may be a potential problem. Given the climate of the Ashtabula area, hypothermia would be expected to be a problem only when outer protective clothing is removed, exposing



the individual to a rapid temperature change. Therefore, immediately following decontamination and removal of disposable protective clothing, if ambient temperatures are 40°F or below, all personnel will immediately enter a preheated vehicle to don warm clothes.

## 6.3 AIR MONITORING

Because of the type of waste, the method of disposal, and in-situ condition, the soils, sediments and water associated with this facility was not expected to be capable of yielding significant quantities of volatile compounds to the air in the workers' breathing zone during sampling. However, because the exact composition of the materials has not been documented, air monitoring to assess the need for respiratory protection will be conducted during sampling.

Monitoring will be conducted with one of the following instruments:

- o Foxboro Century OVA
- o HNu Photoionization Detector
- o Photovac TIP Photoionization Detector.

The selected instrument will be calibrated with respect to benzene.

## 6.4 WORK AREAS AND ACCESS CONTROL PROCEDURES

Samples collected at the RMI-Sodium Plant facility will be considered environmental samples. Sample collection efforts will therefore not be subject to access controls.

## 6.5 DECONTAMINATION PROCEDURES

Equipment will be decontaminated as described in Section VI B. Sampling personnel will rinse latex gloves and boot covers prior to removal. Gloves, boot covers, and coveralls will be bagged and disposed of as approved by EPA. If use of respirators is required, they will be decontaminated following procedures specified by the equipment manufacturer.



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Because of the dilute nature of possible contaminants, decontamination solutions will be disposed of via the plant's industrial wastewater treatment system or as approved by EPA.

## 6.6 SITE MONITORING PROGRAM

A HNu photoionization detector will be used to measure compounds (which represent the types of hazardous compounds present at this facility that are prone to volatilization). An initial reading will be taken at each sample location. If a reading above background is obtained, continuous monitoring in the workers' breathing zone will be initiated. If reading of 1-2 ppm total hydrocarbons above background is obtained in the workers' breathing zone, respirators will be utilized. If a reading greater than 5 ppm total hydrocarbons above background is obtained, work will cease immediately and will only be resumed using Level B protection.

## 6.7 SPECIAL TRAINING

At a minimum, all field personnel will have attended a training course on Health and Safety Planning for a RFA.

## 6.8 WEATHER-RELATED PROBLEMS

Field personnel are advised to be cautious to weather conditions which may increase the potential for dust or volatile emissions, such as high wind or temperature and humidity extremes. In the event of rain or other inclement weather, the sampling team will use judgment to decide if sampling will proceed.

In conditions where hypothermia may be encountered (e.g., ambient temperatures below 40°F), insulated work clothes will be worn by SV personnel. In addition, a heated enclosure (e.g., building, transportation vehicle) will be available on-site.



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REFERENCES

1. Facility Visit, U.S. EPA, June 26, 1986.
2. EPA Preliminary Assessment, August 19, 1985.



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Attachment 1

Table A is an estimate of the analytical costs for the sampling at the RMI facility in Ashtabula, Ohio. The costs are based on figures from the Environscience Laboratory of Lee Wan and Associates. Please note that for the purposes of this estimate, costs were calculated for all samples identified in the sampling plan. Because the collection of certain samples will be contingent on site conditions, the actual number and type of samples collected and, therefore, the costs may vary.



Table A

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<u>Location</u>	<u>Sampling Matrix</u>	<u>No. of Samples</u>	<u>Analysis* Parameters</u>	<u>Cost Per Sample(\$)</u>	<u>Total Cost(\$)</u>
Closed Landfill	Water/Leachate	4	Metals, VOCs	\$370	\$1,480
	Soil	1	Metals, VOCs	390	390
Cooling Tower	Soil	1	Metals, VOCs	240	240
East Pond	Sediment	3	Metals, VOCs	390	1,170
W.W.T.P. Impoundments	Water	2	Metals, VOCs	370	740
	Sediment	3	Metals, VOCs	390	1,170
Background	Soil	2	Metals, VOCs	390	780
	Water	1	Metals, VOCs	370	370
Blanks	-	3	Metals, VOCs	370	<u>1,110</u>
				TOTAL	\$7,450

\* metals refers to EP toxicity metals (\$270 per sample); VOCs refers to the volatile organic compounds of the priority pollutants (\$130 per sample-water; \$150 per sample-soil)



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November 13, 1986

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Chicago, IL 60604

Reference: EPA Contract No. 68-01-7038; Work Assignment No.  
R05-02-37; RMI Sodium Plant

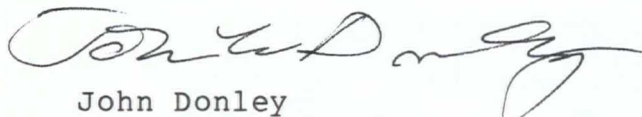
Dear Ms. Norling:

Enclosed please find, for your review, the draft sampling plan for the RMI Sodium Plant in Astabula, Ohio. This draft plan incorporates the sampling points that were discussed initially with Steve Phillips. I understand that there have been some changes in these sampling points that you have indicated should be addressed as part of your review of the plan. Additionally, we will need to discuss the possible use of an alternative analytical method for the metals which you were investigating with the analytical chemist at EPA.

As soon as you have had the opportunity to review and comment on the draft plan, please contact Steve Phillips to discuss any changes and a schedule for the sampling visit. These changes will be incorporated and a final version of the plan will be submitted to you. Steve is aware that you will need a lead time of at least three weeks for the actual sampling visit.

If you have any questions, please call Steve Phillips, the Work Assignment Manager (who can be reached at 713/789-8050), or Gayle Kline.

Sincerely,



John Donley  
Technical Director

cc: K. Burch, EPA Region V  
G. Kline  
S. Phillips, HLA-H

The first 13 1/2 pages could  
have been omitted by  
attaching the  
RFA Work Assignment, and filling  
in the details that **ATKEARNEY**  
was left sketchy in the work  
assignment.

Assignment  
cancelled



SAMPLING PLAN FOR THE RFA SAMPLING  
VISIT RMI-SODIUM PLANT  
ASTABULA, OHIO  
ID NO. OHD000810242

CONTRACT NO. 68-01-7038  
WORK ASSIGNMENT NO. R05-02-37

Prepared for  
U.S. Environmental Protection Agency  
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November 1986



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## 1.0

### INTRODUCTION

As part of the Corrective Action Program outlined in the 1984 Hazardous Solid Waste Amendments to the Resource Conservation and Recovery Act (RCRA), the U.S. EPA is conducting assessments of all operating, closed, or closing hazardous waste facilities. Consequently, the agency has established a RCRA Facility Assessment (RFA) to identify releases or likely releases requiring further investigation. The RFA process includes three main components: 1) the Preliminary Review (PR), 2) the Visual site Inspection (VSI), and 3) the Sampling Visit (SV). The SV is performed in cases where EPA determines that the results of the PR and VSI indicate that sampling is warranted at specific SWMUs and/or other areas of concern.

Omit

EPA Region V has completed the PR and VSI of the RMI-Sodium Plant facility in Ashtabula, Ohio, and has determined that a SV is warranted. EPA has requested the Kearney team to assist them in performing the SV for this facility and to prepare a sampling plan using information provided by EPA.

This SV will be conducted to determine if the suspected SWMUs and other areas of concern have released contaminants to the soil or water. It should be realized that the purpose of sampling in the RFA is not intended to lead to statistical inference. Instead, the results of the SV are intended to support the need for additional data collection activities and/or are to be used in conjunction with other existing data to make decisions regarding needed actions. Consequently, only those field samples will be collected that are associated with an increased certainty of identifying a release.



The subsections of this document establish the procedures which will be followed during the SV. The Introduction defines the SV and its role as part of the RFA program. The section on Project Management lists the parties responsible for each part of the RMI-Sodium Plant facility SV. The Site Background section provides a brief description of site conditions. The Specific Site Sampling Criteria section describes the media to be sampled, sampling density, and the choice of parameters for analysis. The sampling methodologies that will be used during the SV are presented in the Sampling Procedures section. The document also includes a Sampling Quality Assurance section and a Health and Safety Plan. Laboratory QA/QC procedures will be provided by the laboratory performing the analytical work.

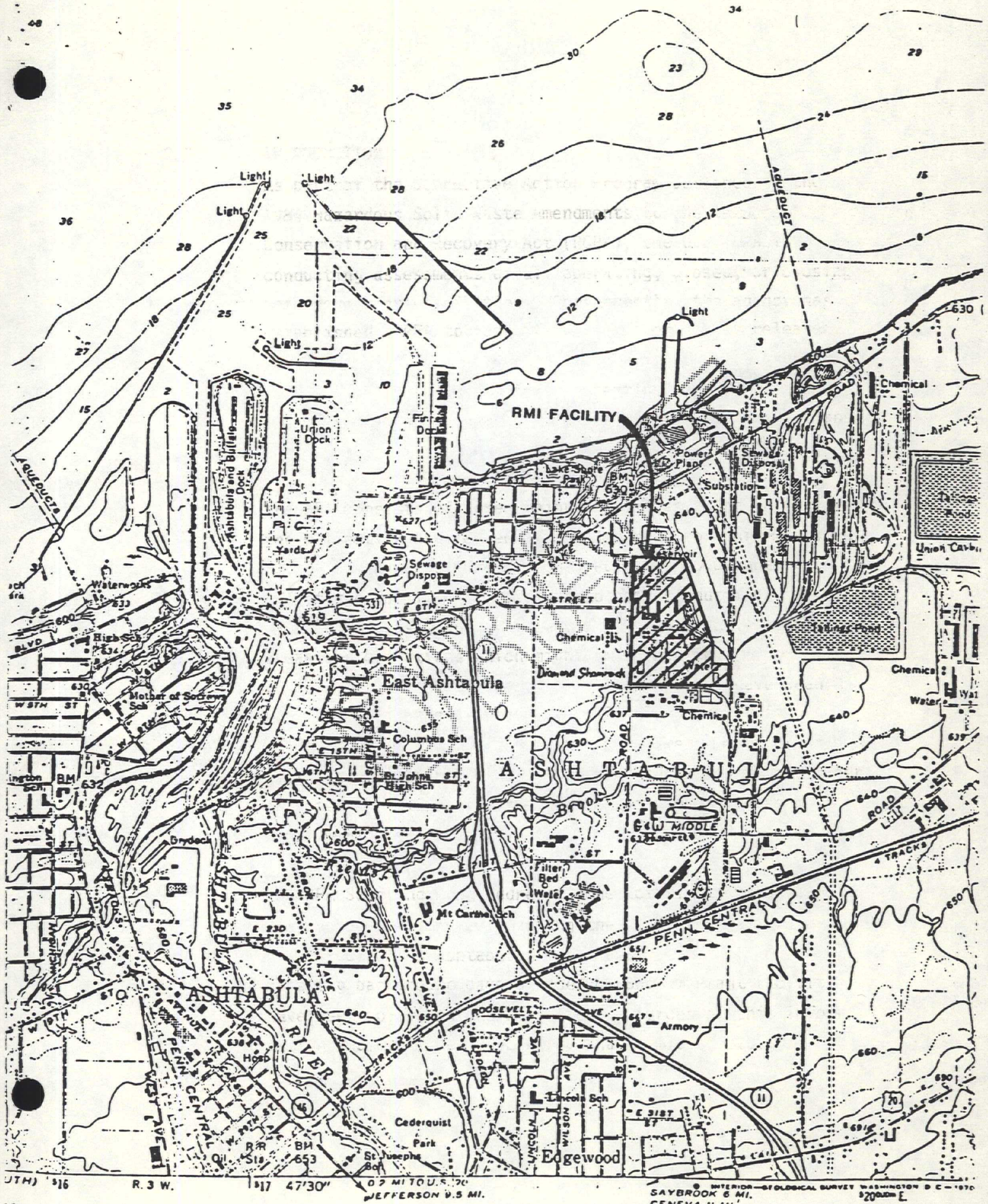
The RFA Sampling Plan details the proposed procedures, rationale, and logistics of soil and surface water sampling, and air monitoring. In addition, the sampling plan addresses the activities to be carried out by the sampling team during the SV at the RMI-Sodium Plant located in Ashtabula, Ohio (see Figure 1). The existing background data of the RMI-Sodium Plant facility have been collected and evaluated. Sources of this information include the August 1985 Preliminary Assessment (PR), the June 1986 facility visit (VSI), files at EPA regional offices, state agencies, and owner/operator records. Four areas at the RMI-Sodium Plant facility were identified by EPA as requiring sampling. The locations of these areas are indicated on Figure 2. These areas either at present receive hazardous waste, have been identified as areas of past hazardous waste management activities, or have been identified as areas having a potential for release. The SV will involve the following activities:



1. Scheduling of the SV;
2. Notifying the owner/operator of the SV;
3. Preparing a Sampling Plan;
4. Meeting with plant personnel to discuss sampling locations and conduct a presampling visit (PSV);
5. Conducting the SV; and
6. Preparing the final report.

This Sampling Plan has been prepared to provide guidance for all SV field activities and to ensure that all sampling procedures are in accordance with EPA protocol. Any deviations from this Sampling Plan during the sampling event will be based on the judgment and approval of the EPA technical monitor or representative and will be recorded in the field logbook.

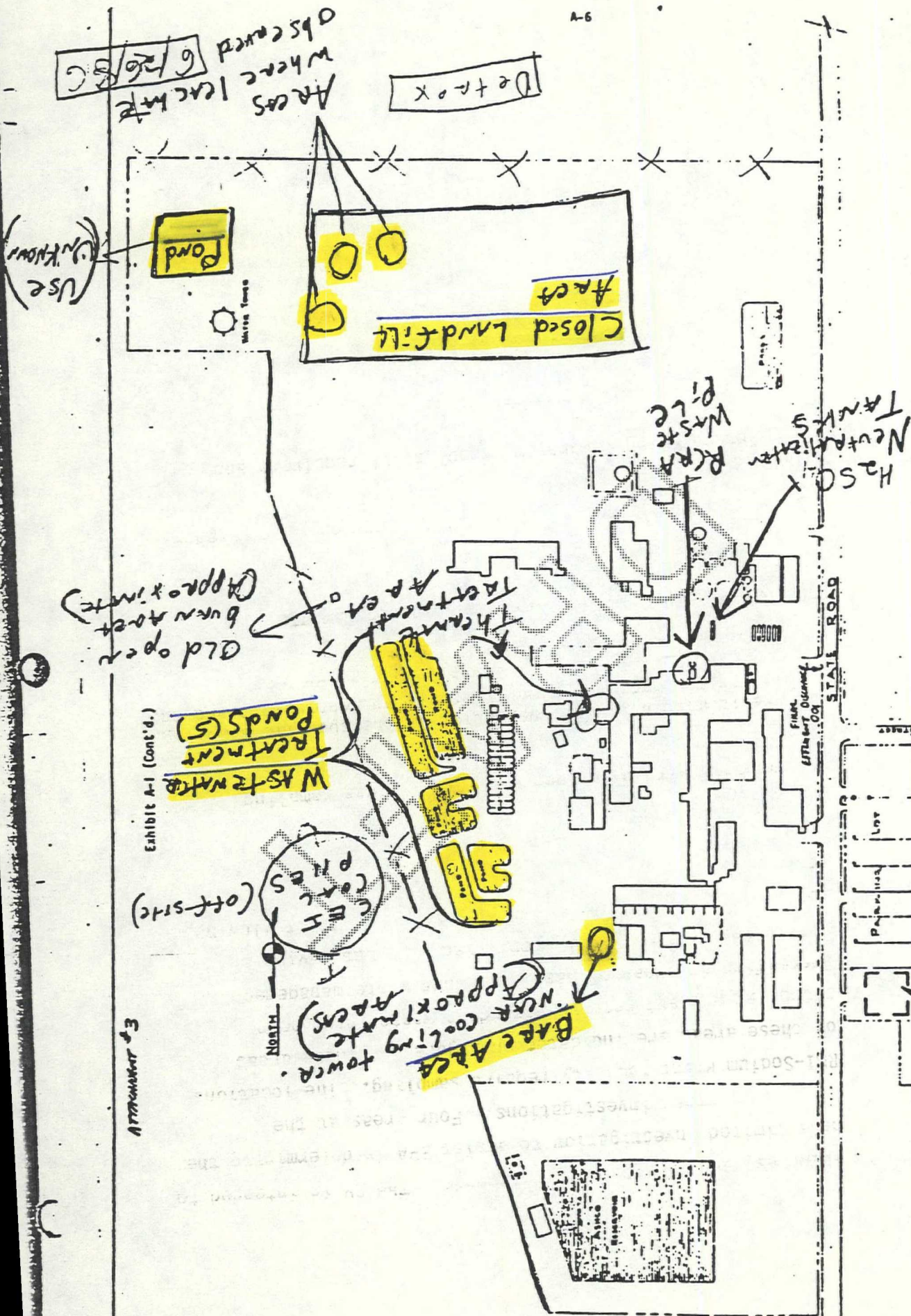






RMI Company  
Ashtabula, Ohio  
PLOT PLAN - Sodium Plant

As 1/2



ATTACHMENT 3

Exhibit A-1 (Cont'd.)



## 2.0

### PROJECT MANAGEMENT

The various components of the RFA performed on the RMI-Sodium Plant facility of Ashtabula, Ohio, are illustrated on the flow chart on the following page. As noted, Region V personnel were responsible for the PR and VSI. A.T. Kearney provides overall management of personnel composing the SV team, which includes a sampling team from Harding Lawson Associates (HLA), and a laboratory analytical team from Lee Wan Associates.



RCRA FACILITY ASSESSMENT: RMI-SODIUM PLANT  
ASHTABULA, OHIO

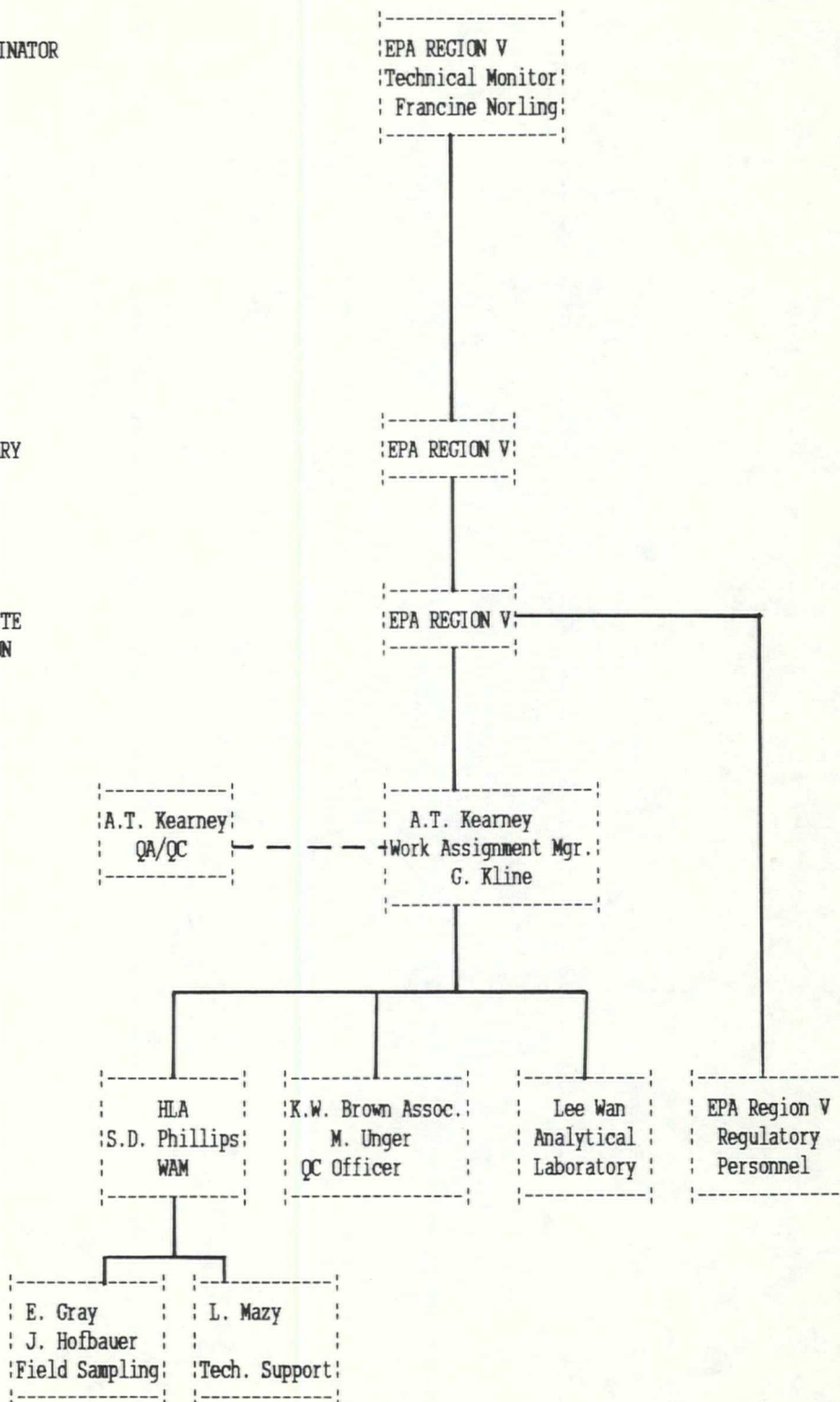
RFA COORDINATOR

PRELIMINARY  
REVIEW

VISUAL SITE  
INSPECTION

SAMPLING  
VISIT

SAMPLING  
TEAM





### 3.0

#### SITE BACKGROUND

The RMI-Sodium Plant is an approximately 50-acre site located on State Road, 3/4 mile south of Lake Erie, near the town of Ashtabula, Ohio. The facility has been in use from 1950 to the present and produces metallic sodium and chlorine gas from spent brine solutions. Hazardous wastes generated at the facility include sulfuric acid, spent cell bath (contaminated with barium, lead, and cadmium) and metallic sodium/calcium residue.

The spent cell bath was placed in an on-site landfill from 1950 to 1980. These wastes are presently stored in an enclosed waste pile. Sulfuric acid which is not recycled is neutralized in the on-site wastewater treatment system. The metallic sodium/calcium residue is incinerated in a burn room.

During capping activities at the landfill, a leachate seep was found next to the railroad tracks at the south end of the plant. Analysis of the leachate revealed TCE, TCA, and PCE.

The U.S. EPA and Ohio EPA visited the facility in June 1986. During the visit, leachate was observed seeping out of the landfill cap. In addition, a white powder was observed at several spots on top of the cap and also near the cooling tower.



#### 4.0 IDENTIFICATION OF SITE SAMPLING CRITERIA

The objective of this SV is to collect samples from those media (e.g., soil and water) which are expected to have been effected by continuing release of hazardous waste. Sampling will be directed at areas of known or suspected past or present waste management operations. These areas have been identified from the PR/VSI portion of the RFA. Effective sample collection in these suspect areas must be sensitive to the intent and conditions of the RFA, considering both the location from where the samples are obtained, and the waste-derived analytes likely to be found in any contaminated medium sampled. The SV is not intended to characterize the site for possible releases, but to identify or refute the likelihood of a release.

#### 4.1 Sampling Locations, Number of Samples, and Analytical Parameters

The relative location of the sample collection areas at the facility are shown in Figure 2. Approximately 23 samples will be collected at the RMI-Sodium Plant facility. The locations of these samples include the closed landfill, the area around the cooling tower, the pond east of the landfill, and the wastewater treatment surface impoundments. Background samples, if applicable, will be taken at locations approved by EPA. The number of samples, types, location, and analytes were determined from discussions with the EPA Technical Monitor. Too many

Presently, there are no factors identified which might influence the sequence by which the effective locations are sampled. The collection of samples will be based on the judgment of the sampling team in consideration of the most efficient and effective routes.



#### 4.1.1 Identification of Sampling Points

The broad sampling areas listed previously are defined as areas where the effects of a hazardous waste release are most likely to have occurred. The distribution of sample collection points within the broader collection areas will be determined by visual observations of the sampling team during the PSV. Locations of sampling points will be selected in the field based on observations of the soil conditions or effects (e.g., stressed vegetation, absence of vegetation) likely to have been caused by the release of hazardous waste.

If observations of soil conditions do not provide sufficient evidence that a release of hazardous materials has occurred, the sampling team will use their best judgment to identify sampling points based on site and environmental conditions (e.g., landscape settings, release pathways, location relative to SWMUs). As a result, the most likely or suspect sampling point areas will be identified.

##### 4.1.1.1 Closed Landfill

Leachate seepage has been identified at the closed landfill. White powder has also been observed on the landfill soil surface.<sup>(1)</sup> Sampling at this unit will consist of:

- Leachate (if present) - maximum 3 samples;
- Landfill surface - 1 composite sample of white powder; and
- Ditch water - 1 grab sample.

---

<sup>(1)</sup> Facility Visit, U.S. EPA, June 26, 1986



Since waste containing metals have been disposed of in the landfill, and volatile organic compounds (VOCs) were found in a leachate seep near the railroad tracks<sup>(1)</sup>, leachate and ditch water samples will be analyzed for EP Toxicity metals and VOCs. The soil sample of the white powder on the landfill surface will be analyzed for EP Toxicity metals only.

4.1.1.2 Cooling Tower

During the VSI<sup>(2)</sup>, an area of dead vegetation and white powder was observed near the plant cooling tower. One composite soil sample will be taken from this area and tested. *Want samples of the white powder, not just random soil samples.*

4.1.1.3 Pond East of the Landfill

There has been neither visual evidence nor documentation of waste disposal in this pond<sup>(2)</sup>; however, because it is near the landfill and its status is unknown, three sediment samples will be taken from the pond and analyzed for EP Toxicity metals and VOCs. ?

4.1.1.4 Wastewater Treatment Surface Impoundments

*- Not sure I still want.*  
These impoundments receive discharges from various areas of the sodium and chlorine operations<sup>(1,2)</sup>. One grab sediment (sludge) sample will be taken from each of the two ponds which initially receive discharges from the plant. An

<sup>(1)</sup>EPA Preliminary Assessment, August 19, 1985

<sup>(2)</sup>Facility Visit, U.S. EPA, June 26, 1986



additional grab sediment sample will be taken from the first pond downstream of these two ponds. Two grab water samples will be taken from the ponds. The ponds from which water samples are to be taken will be determined during the field sampling exercise, with approval of EPA. All samples will be analyzed for EP Toxicity metals and VOCs.

#### 4.1.1.5 Background Samples

Three background samples each will be taken of soils, water, and sediments.

The sampling locations will be determined during the field sampling exercise, with EPA's approval. The soil samples will be analyzed for EP Toxicity metals. The water and sediment samples will be analyzed for EP Toxicity metals and VOCs.

#### 4.2 Analytical Determinations

Table 1 identifies each sample by location, type, and analysis required. These determinations were made during discussions with the EPA Technical Monitor.



Table 1

SWMU Sampling Approaches for the  
RFA Sampling Visit at the  
RMI - Sodium Plant

*Not defined*

SWMU to be Sampled	Sampling Medium	Indication(s) of Contamination	Sampling Density *		Selected Analytes
			No. Pts. per SWMU/area	Depth(s)	
1. Landfill	Soil Leachate Water	Visual evidence during USI	1 3 1	Surface Grab Grab	EP Toxicity Metals EP Tox. Metals & VOC EP Tox. Metal & VOC
2. Cooling Tower	Soil	Visual evidence during VSI	1	Surface	EP Toxicity Metals
3. Pond East of Landfill	Sediment	No visual evidence Use of pond unknown	3	Grab	EP Tox. Metals & VOC
4. WT Surface Impoundment		No visual evidence Receives wastes			
No. 1	Sediment		1	Grab	EP Tox. Metals & VOC
No. 2	Sediment		1	Grab	EP Tox. Metals & VOC
No. 3	Sediment		1	Grab	EP Tox. Metals & VOC
To be deter- mined	Water		2	Grab	EP Tox. Metals & VOC
5. Background	Soil Sediment Water	For comparison	3 3 3	Surface Grab Grab	EP Tox. Metals EP Tox. Metals & VOC EP Tox. Metals & VOC

\* Refer to Figure 2 for sampling locations



## 5.0

### SPECIFIC RFA SAMPLING VISIT PROCEDURES

The RFA/SV must use practical, cost-effective, and reliable methods which provide representative samples for a variety of environmental media and chemical compounds. These methods must conform with a variety of analytical considerations ranging from gross parameter determinations (e.g., pH) to highly sophisticated techniques capable of resolution in the part per billion range. The sampling methodologies discussed in this document cover all media of interest. These methodologies have been selected on the basis of practicality, economics, representativeness, and compatibility with analytical considerations and safety. In addition to specific sampling procedures, quality control procedures specific to the sampling medium are included. Quality assurance procedures applicable to all sampling media (i.e., sample handling and transportation, chain-of-custody procedures, decontamination, etc.) are presented in Chapter 6.0. All sampling methods and materials address the needs and concerns that arise during SVs. The sampling media that will be addressed during the RMI-Sodium Plant facility SV include soil samples, surface water samples, and pond sediment samples.

*omit*

## 5.1

### Soil Sampling

Compositing of soil samples will be performed during this SV. Each area to be sampled will be sectioned into quarters. Prior to sampling, each quarter will be checked for VOCs by air monitoring. If VOCs are detected, a sample from each of the marked off sections will be sampled and placed into separate containers. If VOCs are not detected, 1/4 of the sample container's capacity will be collected from each section and thoroughly mixed before capping.

*?*



The simplest, most direct method of collecting surface soil samples for subsequent analysis is with the use of a spade and scoop. A normal lawn or garden spade can be utilized to remove the top cover or soil to the required depth; the smaller scoop can then be used to collect the sample.

Tao  
governa

This method can be used in most soil types, but is limited somewhat to sampling the near surface. Samples from depths greater than 50 cm become extremely labor intensive in most soil types. Very accurate, representative samples can be collected with this procedure, depending on the care and precision demonstrated by the technician. The use of a flat, pointed mason trowel to cut a block of the desired soil will aid collection of required undisturbed profiles. A scoop or lab spoon will suffice in most other applications. Care will be exercised to avoid the use of devices plated with chrome or other materials when actually collecting the sample, hence the use of the lab spoon.

Not  
relevant.

#### 5.1.1 Sampling Procedures<sup>(1)</sup>

depths  
not  
specified

1. Carefully remove the top layer of soil to the desired sample depth with a spade.
2. Using a scoop, collect the desired quantity of soil.
3. Transfer the sample into an appropriate sample bottle with a stainless steel lab spoon or equivalent.
4. Check that a Teflon liner is present in the cap if required. Secure the cap tightly. The chemical preservation of solids is generally not recommended; refrigeration is usually the best approach, supplemented by minimal holding time.

(1) deVera, E.R., et al, "Samples and Sampling Procedures for Hazardous Waste Streams." EPA 600/2-80-018.



5. Label the sample bottle with the appropriate sample tag. Be sure to label the tag carefully and clearly, addressing all the categories or parameters. Complete all chain-of-custody documents and the field log book record.
6. Place the properly labeled sample bottle in an appropriate carrying container maintained at 4°C throughout the sampling and transportation period.

#### 5.1.2 Sampling Quality Control

1. To guard against inadvertent sample cross-contamination, all reusable sampling equipment will be decontaminated between sampling locations (see Section 6).
2. Cap sample container tightly. For organic analysis, prevent contact with direct light.
3. Sketch or photograph the sample area and sampling activities, or note recognizable features for future reference.
4. All personnel participating in soil sampling will have training and experience in proper sampling procedures, documentation, and safety, specific for the RFA program.

#### 5.2 Surface Water and Sediment Sampling

The pond sampler consists of an adjustable clamp attached to the end of a two- or three-piece aluminum tube or rod that serves as the handle. The clamp is used to secure a sampling breaker (Figure 3). The sampler is not commercially available, but it is easily and inexpensively fabricated. The tubes or rods can be readily purchased from most hardware or swimming pool supply stores. The adjustable clamp and sampling beaker can be obtained from most laboratory supply houses.



The pond sampler is used to collect liquid samples and near-surface sediment samples from disposal ponds, pits, lagoons, and similar reservoirs. Grab samples can be obtained at distances as far as 3.0 meters from the edge of the ponds. The tubular aluminum handle may bow when sampling very viscous liquids if the sampling is not done slowly.

5.2.1 Sampling Procedures <sup>(1)</sup>

1. Assemble the pond sampler. Make sure that the sampling beaker and the bolts and nuts that secure the clamp to the pole are tightened properly.
2. With proper protective garment and gear, take grab samples by slowly submerging the beaker with minimal surface disturbance.
3. Retrieve the pond sampler from the surface water with minimal disturbance.
4. Remove the cap from the sample bottle and slightly tilt the mouth of the bottle below the dipper/device edge.
5. Empty the sampler slowly, allowing the sample stream to flow gently down the side of the bottle with minimal entry turbulence.
6. Continue delivery of the sample until the bottle is almost completely filled.
7. If necessary, preserve the sample using established EPA sampling guidance (see Section 6).

When  
is this?

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(1) deVera, E.R., et al, "Samples and Sampling Procedures for Hazardous Waste Streams." EPA 600/2-80-018.



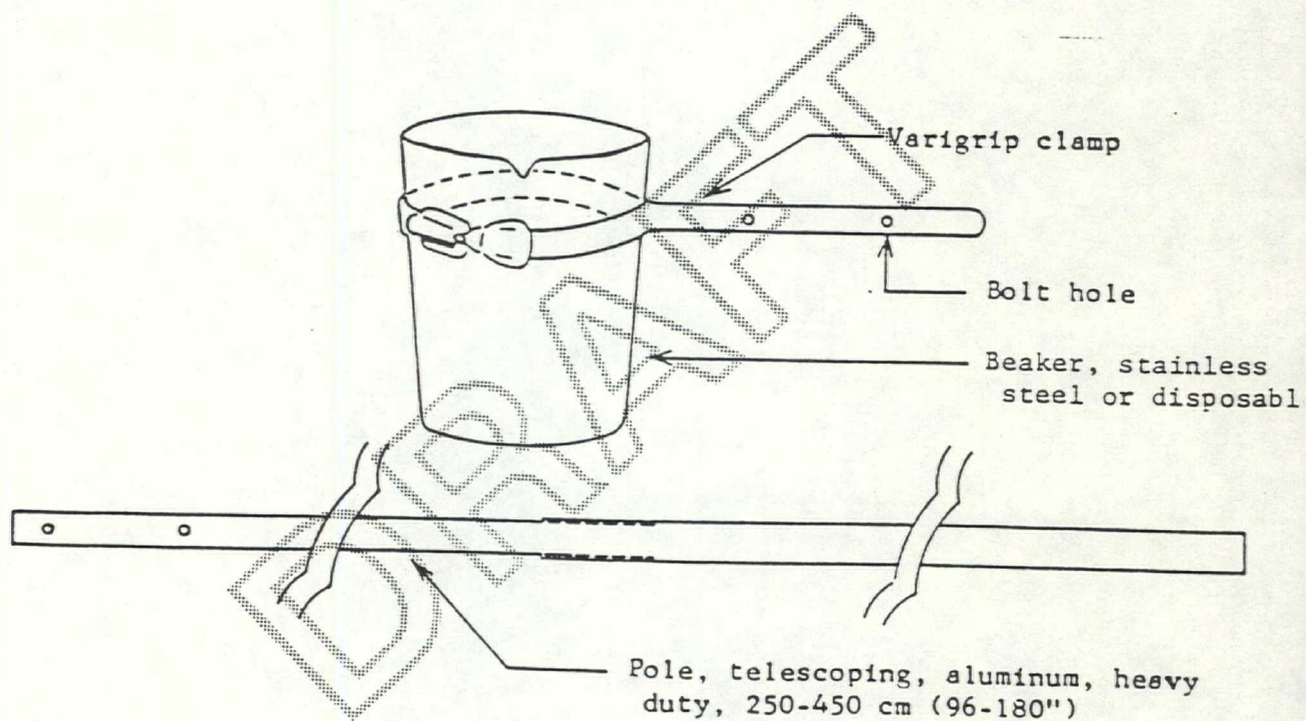


Figure 3 Pond sampler.



8. Check that a Teflon liner is present in the cap, if required. Secure the cap tightly.
9. Label the sample bottle with an appropriate sample tag. Be sure to label the tag carefully and clearly, addressing all the categories or parameters. Record the information in the field logbook and complete the chain-of-custody documents.
10. Place the properly labeled sample bottle in an appropriate carrying container maintained at 4°C throughout the sampling and transportation period.
11. Dismantle the sampler; decontaminate or wipe the parts with terry towels or rags and store the parts in plastic bags for subsequent cleaning. Store used towels or rags in plastic bags for subsequent disposal.

#### 5.2.2 Sampling Quality Control

1. All surface water and sediment collection devices will be constructed of a nonreactive material appropriate for subsequent analysis.
2. Surface water samples will be collected in a manner which ensures minimal agitation of sediment layers and/or alteration of the sample.
3. Color, odor, or turbidity of the surface water sample will be recorded.
4. Latex gloves will be worn throughout the sampling process to ensure personnel health and safety and analytical integrity.
5. All personnel participating in sampling procedures will have training and experience in proper sampling procedures, documentation, and safety.



## 6.0

### SAMPLING AND QUALITY ASSURANCE

The primary goal of the RFA/SV is to determine, through sampling and analytical data, the likelihood of a hazardous waste release from each SWMU located on site at the RCRA facility. However, due to budgetary constraints and limitation in the time allotted to complete an RFA, judgment must be exercised in determining the extent of sampling and analytical information necessary to support the need for further action or investigation. Therefore, the data generated will provide a "snapshot" of the condition of the media sampled at the time of sampling. Data will not be generated over an extended time period to show variations due to seasonal or other factors. Instead, samples will be collected only from those locations where the likelihood of a release can not be inferred from the PR/VSI.

The manner of sampling utilized for the RFA program involves a biased approach, carrying subjectivity to the greatest possible extent in defining the population to be sampled. The purpose of sampling in the RFA is not intended to lead to a statistical inference; instead, the results of the data are intended to support the need for additional data collection activities and/or to be used in conjunction with other existing data to make decisions regarding needed actions. Consequently, only those field samples will be collected that are associated with an increased certainty of identifying a release. The possible absence of certain recognized field quality control activities (e.g., duplicate field samples), will be restituted via internal laboratory QA protocols. Nevertheless, procedures for field sampling

Statistical  
inference



must consider data quality objectives, in situ instrumentation and testing, decontamination and disposal, sampling blanks, sample preservation and handling, recordkeeping, documentation, transportation, presentation of data, and interpretation of results.

#### 6.1 Data Quality Objectives

The data quality objectives for the RFA/SV are defined in terms of accuracy, precision, representativeness, completeness, and comparability of data. These objectives are developed in two phases: (1) the field sampling program phase and (2) the laboratory analysis phase.

##### 6.1.1 Accuracy

Accuracy can be defined as how closely observed values conform to true values. Therefore, performance evaluation samples will be used to monitor accuracy. Performance evaluation samples will consist of blanks and laboratory-prepared spiked samples for the analyte(s) being investigated. These samples will be prepared on a waste specific basis to mimic the expected composition of the environmental samples as closely as possible. The accuracy objectives for quantitative analysis will be expressed in terms of percent recovery of analytes comprising the performance evaluation samples.

Recoveries for performance evaluation samples must be within 80 to 120 percent. If recovery falls outside this range, the analysis will be repeated. If recoveries are still out of this range, analyses must be terminated until the problem



is identified and corrected or a reasonable explanation is provided. Otherwise, all samples associated with the non-compliant performance evaluation sample must be reanalyzed. Laboratory data will be plotted on control charts to monitor analytical accuracy.

#### 6.1.2 Precision

Precision measures the replicability and repeatability of results obtained from analyzing environmental samples. Since RFA sampling strategy proposes minimal sample collection, duplicate field samples are not expected; therefore, the precision monitoring will be employed by the analytical laboratory. Analytical precision will be monitored using results from replicate surrogate spikes and matrix spikes. Laboratory precision goals for the various surrogate compound fractions will be developed using control charts, and expressed as relative percent difference (RPD).

#### 6.1.3 Representativeness

The representativeness of samples collected during the RFA will be ensured in two ways. First, all field sampling will be done as outlined in the section referring to specific sampling procedures. Any modifications to these procedures will be recorded in the field logbook. All sampling procedures will be in accordance with established EPA guidelines and procedures (e.g., SW-846 and EPA 600/2-80-018). These guidelines and procedures have been developed to promote consistency in environmental sampling efforts and to help ensure that proper sampling and sample handling procedures are followed and proper equipment is used.



In addition, facility background information will be evaluated to determine the potential for a release from each of the SWMUs located on site. Before sampling activities are undertaken, the RFA PR/VSI report and any additional pertinent information will be thoroughly evaluated to identify the following.

1. The likelihood of a release from each of the facility SWMUs;
2. Past performance records (e.g., compliance files, NPDES data);
3. Sensitive areas (e.g., toeslopes, depositional areas, discolored soils);
4. The design and construction of groundwater monitoring wells or other sampling accesses; and
5. The existence of sampling constraints.

Consideration of this information in the sampling effort will provide RFA samples that are representative of the facility being assessed.

#### 6.1.4 Completeness

Completeness for the RFA/SV will be monitored by both qualitative and quantitative means. A qualitative assessment will be made by comparing the results of both the PR/VSI report and Sampling Visit with the objectives and procedures for field sampling that have been developed for the RFA program. This assessment will determine on a qualitative level which objectives are met and which are not. Ultimately, the regulatory agency will determine completeness (e.g., whether additional samples need to be collected).



In order to satisfy internal quality assurance, quantitative completeness may also be assessed as:

$$\frac{\text{Total Samples Taken for Which Acceptable Analytical Results are Generated}}{\text{Total Number of Samples}} \times 100$$

The goal for quantitative completeness is 95 percent.

6.1.5 Comparability

Data will be generated under the RFA/SV based on established EPA sampling guidance. The protocols used in the collection of field samples involving equipment, preparation, preservation, handling, reporting, chain-of-custody, and documentation will ensure comparability with other EPA field sampling programs. Site specific sampling will be planned and conducted in accordance with the general sampling guidance developed for RFAs and include input and approval from EPA.

6.2 In Situ Instrumentation and Testing

In the event that portable instrumentation and/or analysis kits are brought on site to provide immediate in situ testing, the QA measures that are employed will account for the conditions which may influence operating procedures, and hence, data quality. Therefore, standard QA procedures that are used for in situ testing involve:

- o Documentation of Sampling Site - The location and prevailing conditions of a sampling site may affect the analytical results obtained during in situ testing. For example, the terrain in which an in situ sampling point is located, or the existence of permanent structures/processes located adjacent to in situ sampling sites can impede or confound any subsequent analytical results.



In addition, daily weather patters (e.g., windy conditions) and seasonal trends (e.g., operating temperature) can compromise the integrity of in situ analytical results. Therefore, confirmation of the sampling site is warranted. Specifically, the location of all in situ testing sites will be documented (e.g., benchmarks, photographs) in the sampling log book, and prevailing conditions will be recorded and further verified (whenever possible) through photography.

- Sampling/Analytical Methodology - The portable field kits that can be used to provide in situ analytical results must be compatible with the conditions of the required sampling event. Therefore, all probes, collection devices, and storage containers that are included as part of a specific field analysis kit will be evaluated to ensure that site-specific conditions or contaminants to not undermine the integrity of the analytical results. In addition, specific field kit methodologies will be assessed for any additives/preservatives which might confound the analytical results.
- Instrumentation - Only those analytical instruments that are recognized as field portable will be used for in situ sampling and analysis. Manufacturer's instructions will be used, including specific calibration and standardization techniques, and preventative and remedial maintenance.

### 6.3 Decontamination and Disposal

All containers used in the site sampling effort will be initially decontaminated by the laboratory and will be ready for implementation prior to site entry. Equipment will be decontaminated by the sampling team prior to site entry. In order to prevent unnecessary contamination of sampling equipment prior to use, a clean, dedicated area (e.g., pickup truck, plastic sheet) will be established at each sampling location to prevent contaminated media from coming in contact with any sampling tools or equipment.



Unlike monitoring equipment, sampling equipment becomes contaminated during the sampling event. Therefore, steps must be taken to effectively prevent cross-contamination of sampling media between sampling episodes.

Sampling equipment and other equipment or material which is to be reused will be decontaminated as follows:

- Initial wash with clean water;
- Decontamination wash using trisodium phosphate solution;
- Rinse with trisodium phosphate solution; and
- Double rinse with distilled water.

Washdown solutions should not cause adverse impact to the surrounding environment and should not require any special disposal considerations. Therefore, washdown solutions will be collected, contained, and disposed of on site.

Equipment which is not to be reused will be placed in doubled plastic garbage bags and disposed of at the facility as approved by EPA.

#### 6.4 Sample Blanks

In order to verify that the sample collection and handling process has not affected the quality of the field samples, the following three types of sample blanks will be used:

- Trip blanks;
- Field blanks; and
- Equipment blanks.



Sampling QA protocol requires that sample blanks be submitted as other field samples with no obvious marks or labels.

6.4.1 Trip Blanks

Trip blanks are used to determine if contamination is introduced from the sample containers during transport to the facility or storage at the laboratory. Trip blanks will be prepared by the site sampling team using deionized, distilled water of known high purity, and will be sent with the other sample containers to the field sampling site. One set of trip blanks will be prepared for each analytical parameter group (e.g., organics, metals, and volatiles) under investigation and their respective type containers. Trip blanks will be stored and will be analyzed only if contamination is detected in field blanks.

6.4.2 Field Blanks

Field blanks will determine if contamination is introduced from sample collection activities or the prevailing sampling environment. Field blanks will be prepared by the field sampling team by bringing deionized, distilled water of known high purity to the field sampling site and using this water to prepare appropriate sample aliquots for each analytical parameter group under investigation. One set of field blanks will be prepared at least once during the field sampling visit. Additional field blanks may be prepared as deemed necessary when samples are taken in "suspect" areas or conditions.



#### 6.4.3 Equipment Blanks

Equipment blanks will determine if contamination is introduced from the sample collection equipment following decontamination practices. Equipment blanks will be prepared by the field sampling team by filling the sample collection device with deionized, distilled water of known high purity (or passing this water through the sample collection device) and transferring this water to a sample container. Considering standardized decontamination procedures will be practiced, one equipment blank will be prepared for one or more sample collection devices used for each media sampled during the SV (see Chapter 5.0, Specific RFA Sampling Visit Procedures). Appropriate aliquots will be prepared for each analytical parameter group under investigation.

#### 6.5 Sample Preservation and Handling

The objective of a sampling plan is to collect a portion of the sample medium and present it to a laboratory for specific analysis. The sample volume must be small enough to allow convenient transportation, yet adequate for pertinent analyses. Samples must be handled in such a way that no significant changes in composition would occur before any tests are made. Many of the analytical parameters considered in samples collected during an RFA/SV require specific preservation and handling concerns (Test Methods for Evaluation Solid Waste - Physical/Chemical Methods, SW-846, U.S. EPA, 1984).



#### 6.5.1 Sample Containers

Table 2 identifies the containers required for routine soil, sediment, and water collection. It is anticipated that the soil samples will be comprised of low to medium concentration levels, and the water and sediment samples will be comprised of low concentration levels.

The type of sample container used for collecting ground-water, surface water, soil, waste, and air samples at hazardous waste facilities, and the respective volumes required for analysis are specified according to the analyte in question.

When metals are the analytes of interest, either polyethylene containers with polypropylene caps or glass containers with Teflon-lined caps will be used.

When organics are the analytes of interest, glass bottles with Teflon-lined caps will be used. Aqueous samples for which volatile compounds are the analyte in question will be contained in glass vials equipped with Teflon-backed silicon caps.

The containers used to collect air samples vary with the analytical methodology being used; therefore, these sample containers will be specified by the analytical laboratory. No air samples are to be taken during this SV, however, air monitoring will be performed.

omit



Table 2

Preservation and Handling Procedures for  
RFA Soil and Water Samples

Should be  
specific to  
this  
sampling  
effort

Parameter	Container <sup>a</sup>	Preservation	Holding Time <sup>b</sup>
Acidity	P, G	Cool, 4 <sup>o</sup>	14 days
Alkalinity	P, G	Cool, 4 <sup>o</sup>	14 days
Asbestos	P	Cool, 4 <sup>o</sup> C	48 hours
Bacteria	Pro, G	Cool, 4 <sup>o</sup> C, 10% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> EDTA	6 hours
Bicarbonate	P, G	Determine on-site	No holding
BOD	P, G	Cool, 4 <sup>o</sup> C	48 hours
Bromide	P, G	None required	28 days
Carbonate	P, G	Determine on-site	No holding
Chloride	P, G	None required	28 days
Chlorine demand	P, G	Determine on-site	No holding
Chromium VI	P, G	Cool, 4 <sup>o</sup> C	24 hours
COD	P, G	H <sub>2</sub> SO <sub>4</sub> to pH <2; Cool, 4 <sup>o</sup> C	28 days
Color	P, G	Cool, 4 <sup>o</sup> C	48 hours
Conductance	P, G	Cool, 4 <sup>o</sup> C	28 days
Cyanide	P, G	NaOH to pH >12, 0.6g Ascorbic acid <sup>c</sup>	14 days
Fluoride	P	None required	28 days
Hardness	P, G	HNO <sub>3</sub> to pH <2	6 months



Table 2  
Preservation and Handling Procedures for  
RFA Soil and Water Samples (cont.)

Parameter	Container <sup>a</sup>	Preservation	Holding Time <sup>b</sup>
Hydrazine	P, G	If not analyzed immediately, collect under acid. Add 90 ml of sample to 10 ml (1 + 9) HCl	7 days
Iodine	P, G	Cool, 4°C	24 hours
Iodine	P, G	Determine on-site	No holding
<u>Metals</u> (except Cr VI)			
Dissolved	P, G	Filter on-site, HNO <sub>3</sub> to pH <2	6 months, except Hg--28 days
Suspended	P, G	Filter on-site	6 months, except Hg--28 days
Total	P, G	HNO <sub>3</sub> to pH <2	6 months, except Hg--28 days
<u>Nitrogen</u>			
Ammonia	P, G	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Kjeldahl (total)	P, G	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Nitrate plus Nitrite	P, G	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
Nitrate	P, G	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days



Table 2  
Preservation and Handling Procedures for  
RFA Soil and Water Samples (cont.)

Parameter	Container <sup>a</sup>	Preservation	Holding Time <sup>b</sup>
Nitrite	P, G	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> to pH <2	28 days
<u>Organics</u>			
Extractables base/neutrals and acids	G, Teflon- lined cap	Cool, 4°C	7 days until extraction, 30 days after extraction
Purgeables (halocarbons- aromatics)	G, Teflon- lined cap	Cool, 4°C	14 days
Purgeables (acrolein and acrylonitrile)	G, Teflon- lined cap	Cool, 4°C	14 days
Pesticides and PCBs	G, Teflon- lined cap	Cool, 4°C	7 days until extraction, 30 days after extraction
pH	P, G	Determine on-site	2 hours
Phenol	G	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> to pH <2	24 hours
<u>Phosphorus</u>			
Ortho phosphate	P, G	Filter, on-site, cool, 4°C	48 hours
Phosphorus Total	P, G	Cool, 4°C, H <sub>2</sub> SO <sub>4</sub> to pH <2	28 hours



Table 2

Preservation and Handling Procedures for  
RFA Soil and Water Samples (cont.)

Parameter	Container <sup>a</sup>	Preservation	Holding Time <sup>b</sup>
Radioactivity	P, G	HNO <sub>3</sub> to pH <2	6 months
<u>Silica</u>			
Dissolved	P	Cool, 4°C	28 days
Total	P	Cool, 4°C	7 days
<u>Solids</u>			
Dissolved	P, G	Cool, 4°C	7 days
Volatile Dissolved	P, G	Cool, 4°C	7 days
Suspended	P, G	Cool, 4°C	7 days
Volatile Suspended	P, G	Cool, 4°C	7 days
Total	P, G	Cool, 4°C	7 days
Volatile Total	P, G	Cool, 4°C	7 days
Settleable	P, G	Cool, 4°C	48 days
Sulfate	P, G	Cool, 4°C	28 days
Sulfide	P, G	Cool, 4°C, 2 mil zinc acetate plus NaOH to pH >9	7 days
Sulfite	P, G	Determine on-site	No holding
Surfactants	P, G	Cool, 4°C	48 hours



Table 2  
Preservation and Handling Procedures for  
RFA Soil and Water Samples (cont.)

Parameter	Container <sup>a</sup>	Preservation	Holding Time <sup>b</sup>
TOC	G, Teflon-lined cap	Cool, 4°C, HCl to pH 2	28 days
<u>TOX</u>	G, Amber, Teflon-lined cap	Cool, 4°C, add 1 ml 0.1 M sodium sulfite	7 days
Turbidity	P, G	Cool, 4°C	48 hours

a P = Polyethylene, G = Glass, Pro = Polypropylene

b The holding times are those listed in Technical Audititions to Methods for Chemical Analysis of Water and Wastes EPA-600/4-82-055 and Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057.

c Should only be used to presence of residual chlorine.



6.5.2 Storage

Sampling equipment that has been decontaminated and not scheduled for additional use will be sealed/stored in a clean environment following drying/cooling to prevent any accumulation of dust or other contaminants. In addition, sample containers and other sampling tools will be stored so as to prevent contamination (i.e., inverted or capped with aluminum foil).

6.5.3 Preservation

Table 2 identifies the treatment and preservation methods utilized for various contaminants. This sampling program will consist of low concentrations of volatiles and metals in both water and sediment samples, and low to medium concentrations of metals in the soil samples.

Samples will be shipped to an EPA approved laboratory by means of an express courier (e.g., DHL, Purolator). Samples considered to contain medium concentrations will be placed in one-gallon metal paint cans. The remaining space in the paint can will be filled with vermiculite or a similar type material. The paint cans and the remainder of the samples will then be stored in rigid plastic, fiberglass, or metal coolers (ice chests). Packing material will be used to insulate the samples and protect them from breakage during shipment. Samples collected during a day will be scheduled for shipment at the end of that day's activities.



## 6.6 Recordkeeping, Documentation, and Transportation

The locations from which samples are collected will be documented. In addition, all samples collected will be labeled in a clear and precise way for proper identification in the field and tracking in the laboratory. The documents used during the sampling visit consist of the individualized sample labels, a field logbook, and a chain-of-custody/field tracking record. In order to ensure accountability, these documents will be appropriately cross-coded with a unique identifier. The following is a hypothetical example of such an identifier:

6273,355 - 09 - 037

Where:

6273,355 - corresponds to the project code designated for the specific SV;

09 - corresponds to the ninth sampling location visited during the course of the SV; and

037 - corresponds to the 37th overall sample taken during the course of the SV.

There will be no erasures permitted on any of the documents. Instead, all entries warranting correction will be stricken with a single line, and accompanied by the date and initials of the sampling representative.

In order to preserve the integrity of the sample(s) from the time of collection until reception at the laboratory, sample seals will be used in conjunction with standardized sample transportation procedures.



6.6.1 Documentation of Sampling Locations

Whenever samples are collected, the location from where the sample was taken will be verified. If possible, photographs will be used to document sampling sites and to verify any written description entered in the field logbook. If photographs are not applicable to the situation, the method of triangularization will be used in conjunction with permanent structures or other benchmarks to document sampling locations.

6.6.2 Field Logbook

The field logbook will contain all additional information and observations including pertinent information from the chain-of-custody document. This information will describe the SWMU being sampled and any factors or conditions which might affect sampling procedures (e.g., prevailing weather, sampling terrain) and, hence, subsequent analytical results. All routine measurements and observations that are derived will also be recorded in the field logbook, including sampling blanks, soil descriptions, and pertinent colors or odors.

6.6.3 Chain-of-Custody/Field Tracking Record

To establish documentation necessary to trace sample possession from the time of collection, a chain-of-custody record will be filled out and accompany any sample or sample group transported for laboratory analysis. In addition, a carbon copy of this document will be retained by the field sampling personnel to provide analytical guidance for each sample collected. This form will then serve as the field



tracking record or cross-reference to the specific analytical procedures requested for each sample on the chain-of-custody record. The record will contain the following information.

1. The sample identification number, specific for each sample collected;
2. The date and time that each sample was collected;
3. The specific sample type (e.g., water, soil, air);
4. Parameters requested for analysis;
5. Signature of person(s) involved in the chain of possession; and
6. Inclusive dates of possession.

The chain-of-custody record will be placed in a waterproof bag and taped to the underside of the lid of the ice chest being used for sample transportation. An updated, signed copy of the chain-of-custody record, completed by the receiving laboratory, will be requested by the field sampling team. An example of the chain-of-custody/field tracking record is provided in Figure 4.

#### 6.6.4 Sample Labels

A legible label providing the specific sample identification code will be affixed to each sample container. The labels will be sufficiently durable to remain legible even when wet and, in addition to the sample identification code, will contain the address and telephone number of the field sampling team, the date of sample collection, and the signature of the collector. Specific analytical services for each sample will be derived from the chain-of-custody record. An example of a sample label is provided in Figure 5.



Job No.		Project Name				Location									
Sample Identification	Date	Time	Sample Container (Size/Material)	Sample Type (Liquid, Soil, etc.)	Preservative	Analyses Requested						Comments			
						A	B	C	D	E	F				
Relinquished By (Signature)		Date	Time	Received By (Signature)		Analyses:									
						A									
						B									
						C									
						D									
						E									
						F									



Example of General Sample Label

<b>HARDING LAWSON ASSOCIATES</b>	
6220 Westpark Drive	
Suite 100	
Houston, Texas 77057	
(713) 789-8050	
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/>	
<hr/>	<hr/>
Signature of Collector	Date



6.6.5 Sample Seals

Sample seals will consist of narrow strips of adhesive material that will be used to demonstrate that no tampering has occurred. They are not intended for use on individual sample containers, but on the sample transport container(s) not possessing a lock.

6.6.6 Sample Transportation

Samples transported off site will be packaged for shipment in compliance with current Department of Transportation (DOT) and commercial carrier regulations. Initially, samples will be placed in an ice chest by field personnel. Following collection, samples will be delivered to the laboratory as quickly as possible. In addition, the completed chain-of-custody records, laboratory analysis request forms, and any other shipping/sample documentation accompanying the shipment will be enclosed in a waterproof plastic bag and taped to the underside of the cooler lid.



## 7.0 HEALTH AND SAFETY PLAN

Prior to beginning the sampling activities, the RMI-Sodium Plant facility's medical emergency plan will be reviewed by the sampling team. The location and phone number of the nearest medical facility and the phone number of the local ambulance service will be recorded for use in an emergency. The facility manager will be the Health and Safety Plan contact for the SV. Ms. Elani Gray and Mr. Joseph Hofbauer will represent the Harding Lawson Associates sampling team.

Physical hazards associated with the RMI-Sodium Plant site are those typical of an industrial environment (i.e., falling objects, dust, and obstacles).

### 7.1 Potential Hazards

The following categories of potential hazards may be associated with this sampling activity:

1. Chemical hazards from exposure to waste and contaminated soil and water;
2. Mechanical hazards associated with hand sampling equipment; and
3. Low temperature hazards from working in ambient temperatures below 40°F.

### 7.2 Procedure and Equipment to Mitigate Hazards

The following procedure and equipment will be used to mitigate the hazards identified above.



#### Chemical Hazards

Hazards associated with chemical exposure will be mitigated by the use of personal protective equipment. Level of protection will be a modified Level C, consisting of the following equipment:

- Hard hat;
- Tyvek coveralls;
- Latex gloves;
- Steel toe boots;
- Latex boot covers;
- Full face or half face, twin-cartridge respirator equipped with organic vapor/dust, fume, mist cartridges (only if indicated by air monitoring).

#### Mechanical Hazards

Mechanical hazards associated with hand sampling equipment will be mitigated through use of standard safety practices for the construction industry.

#### Low Temperature Hazards

If sampling is performed at ambient temperatures below 40°F, hypothermia may be a potential problem. Given the climate of the Ashtabula area, hypothermia would be expected to be a problem only when outer protective clothing is removed, exposing the individual to a rapid temperature change. Therefore, immediately following decontamination and removal of disposable protective clothing, if ambient temperatures are 40°F or below, all personnel will immediately enter a preheated vehicle to don warm clothes.



### 7.3

#### Air Monitoring

Because of the type of waste, the method of disposal, and in situ condition, the soils, sediments, and water associated with this facility are not expected to be capable of yielding significant quantities of volatile compounds to the air in the workers' breathing zone during sampling. However, because the exact composition of the materials has not been documented, air monitoring to assess the need for respiratory protection will be conducted during sampling.

Monitoring will be conducted with one of the following type instruments:

- Foxboro Century OVA;
- HNu Photoionization Detector; or
- Photovac TIP Photoionization Detector.

The selected instrument will be calibrated to detect benzene. An initial reading will be taken at each sample location. If a reading above background is obtained, continuous monitoring in the workers' breathing zone will be initiated. If a reading of 3 ppm total hydrocarbons above background is obtained in the workers' breathing zone, respirators will be utilized. If a reading greater than 7.5 ppm total hydrocarbons above background is obtained, work will cease immediately and will only be resumed using Level B protection.

### 7.4

#### Work Areas and Access Control

Samples collected at the RMI-Sodium Plant facility will be considered environmental samples. Sample collection efforts will therefore not be subject to access controls.



7.5      Decontamination

Equipment will be decontaminated as described in Section 7.3. Sampling personnel will rinse latex gloves and boot covers prior to removal. Gloves, boot covers, and tyvek coveralls will be bagged and disposed of using EPA-approved methods. If use of respirators is required, they will be decontaminated following procedures specified by the equipment manufacturer.

Because of the dilute nature of possible contaminants, decontamination solutions will be disposed of via the plant's industrial wastewater treatment system or as approved by EPA.

7.6      Special Training

At a minimum, all field personnel will have attended a training course on Health and Safety Planning for an RFA.





RECEIVED

AUG 27 1986

SOLID WASTE BRANCH  
U.S. EPA, REGION V

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consultants in environmental management

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August 26, 1986

Mr. Joe Holman  
RMI Company  
P.O. Box 269  
Niles, OH 44446

Dear Joe:

This letter is in regard to the recent analytical results of four (4) surface water samples with varying concentrations of Sodium Chloride that were evaluated by several different analytical methods. After reviewing the data of AWARE Report No. 04986 (copy attached), I believe that it becomes obvious that in most cases the Sodium Chloride content causes an erroneous high concentration of the analyte. It is for this reason that I would highly recommend the following analytical methods be employed on all water samples and EP Toxicity Extracts from soil and waste samples for the RMI Company sodium plant in Ashtabula.

Arsenic:	206.4 (SDDC) or 206.5 (Hydride)
Barium:	208.1 (Direct Aspiration - Matrix Match)
Cadmium:	213.1 (Direct Aspiration After APDC Chelation)
Chromium:	218.3 (Direct Aspiration After APDC Chelation)
Lead:	239.1 (Direct Aspiration After APDC Chelation)
Mercury:	245.1 (Cold Vapor)
Selenium:	270.3 (Hydride)
Silver:	272.1 (Direct Aspiration After APDC Chelation)

Note: The APDC (ammonium pyrrolidine dithiocarbamate) method has been referenced for no other reason than it seems to be the most common; many other chelating agents can be used with satisfactory results.

I have also attached the information that Mr. John Morris had requested on August 21, 1986 regarding the oxidation states of the spike solutions that were used to generate QC/QA data. Appropriate analytical methods that Mr. Morris had requested are listed in the above table.

394-70



Mr. Joe Holman  
Page 2  
August 26, 1986

If further information is required, please feel free to contact me at your earliest convenience at (615) 255-2288 ext. 246.

Sincerely,

AWARE Incorporated

*D. Rick Davis*

D. Rick Davis  
Vice President/Analytical & Testing Services

DRD/jmf

Attachment

cc: Jeffrey L. Pintenich  
John Morris  
Chris Frazier  
Francine Norling



STANDARD COMPOSITION FOR ATOMIC ABSORPTION

Arsenic:	Fisher Scientific - Arsenic Trioxide in dilute nitric acid
Barium:	Fisher Scientific - Barium Chloride in distilled water
Cadmium:	Fisher Scientific - Cadmium Metal in dilute nitric acid
Chromium:	Fisher Scientific - Potassium Dichromate in distilled water
Lead:	Fisher Scientific - Lead Nitrate in dilute nitric acid
Mercury:	Fisher Scientific - Mercuric Chloride in distilled water
Selenium:	Aldrich Chemical - Selenious Acid in 2 percent nitric acid
Silver:	Fisher Scientific - Silver Nitrate in distilled water



RMI COMPANY

REPORT #:04986  
 SAMPLE NO.: 8053-8056  
 DATE RECEIVED: 8/11/86

	D/L	#1 8053	#6 8054	#13 8055	#18 8056
As-Graphite	5.0	41	31	43	1,500/360 <sup>a</sup>
As- SDDC	30	BMDL	BMDL	BMDL	BMDL
Ba-Flame	100	560	BMDL	750	BMDL
Cd-Graphite	0.1	0.9	0.5	0.9	59/51 <sup>a</sup>
Cd-Chelation	0.5	BMDL	BMDL	BMDL	26
Cr-Flame	50	BMDL	BMDL	BMDL	81/BMDL <sup>a</sup>
Pb-Graphite	5.0	BMDL	BMDL	BMDL	BMDL <sup>b</sup> /15 <sup>a</sup>
Pb-Chelation	5.0	BMDL	BMDL	BMDL	34
Hg-Cold Vapor	0.4	BMDL	BMDL	BMDL	BMDL
Se-Graphite	2.0	11	53	64	1,500/165 <sup>a</sup>
Se-Hydride	2.0	BMDL	4.0	BMDL	BMDL
Ag-Flame	20	BMDL	BMDL	BMDL	BMDL
Ag-Chelation	2.0	4.0	BMDL	2.0	7.0

<sup>a</sup>Matrix Match

<sup>b</sup>Detection limit increased 10 x due to salt matrix.

D/L = Detection Limit.

BMDL = Below Minimum Detection Limit.

Results in ppb unless otherwise specified.

Method Reference: Methods for Chemical Analysis of Water and Wastes, USEPA, 1979.



## RMI COMPANY

REPORT #:04986  
 SAMPLE NO: 8053-8056  
 DATE RECEIVED: 8/11/86

## METHOD PERFORMANCE DATA

	Conc. Added	Conc. Found	% Rec.	Type
As-Graphite	43	43	100	a
As-Graphite	35	30	86	b
Ba-Flame	344	374	109	a
Ba-Flame	5,400	5,400	100	b
Cd-Graphite	4.6	5.5	120	a
Cd-Graphite	3.3	3.6	109	a
Cd-Graphite	3.5	3.7	106	b
Cd-Chelation	4.6	4.7	102	a
Cd-Chelation	23	20	87	b
Cr-Flame	261	263	101	a
Cr-Flame	2,500	1,800	72	b
Cr-Flame	1,300	820	63	b
Cr-Chelation	45	39	87	a
Cr-Chelation	21	23	110	b
Pb-Graphite	22	21	95	b
Pb-Graphite	45	45	100	a
Pb-Chelation	117	135	115	b
Hg-Cold Vapor	5.0	5.5	110	b
Hg-Cold Vapor	5.0	5.5	110	b
Hg-Cold Vapor	1.8	1.9	106	a
Hg-Cold Vapor	1.8	2.1	117	a
Se-Graphite	53	45	85	a
Se-Hydride	50	47	94	a
Se-Hydride	10	14	140	b (#1)
Se-Hydride	14	15	107	b (#6)
Se-Hydride	10	11	110	b (#13)
Se-Hydride	11	11	100	b
Ag-Flame	68	71	104	a
Ag-Chelation	47	57	121	b

<sup>a</sup>EPA Reference.

<sup>b</sup>Sample Matrix (#18) unless otherwise specified.

Concentration units are ppb.



Re: HMM  
RMI  
Ashtabula County

Ohio EPA

Mr. Joe Holman  
Staff Environmental Engineer  
RMI Company Sodium Plant  
P.O. Box 550  
Ashtabula, Ohio 44004

October 15, 1981

Dear Mr. Holman:

This letter is written to confirm our meeting of September 30, 1981, at the Sodium Plant in Ashtabula. RMI was represented by you, Mr. Bernard Wilkens, Mr. O. Berteau, Mr. Larry Hanek and Mr. George Hakkio. Ohio EPA was represented by Gary Gifford, Chris Khourey and I. The subject of this meeting was the leachate outbreaks in the newly constructed ditch on the south side of the RMI's property.

You, Larry Hanek, Chris Khourey, Gary Gifford and I inspected the ditch at about 11:30 AM. We found several pools of a dark red liquid in the bottom sediments of the ditch. There was a strong odor, like that of chlorinated organics, in the area. Gary Gifford and I sampled this material by pipetting the leachate into an uncontaminated glass sampling jar supplied by the Ohio Department of Health. RMI's lab supplied the uncontaminated glass pipett. The sample was iced and locked in my car.

We reconvened at about 1:30 PM to discuss the leachate. RMI proposed lining the entire ditch with two feet of compacted clay in an attempt to prevent the contaminated leachate from surfacing. Also, RMI proposed raising the gradient of the ditch to transform the ditch into a gentle swail which would still carry runoff away from the closed landfill.

We also discussed the history of RMI's site. When RMI purchased the property there was a farmhouse on it. It is believed that there was a water well on site at that time. RMI has manufactured only sodium metal and chlorine at this site. At this time there seems to be no evidence linking RMI to the contaminated leachate. We will continue to investigate the source of this contamination.

The sample of leachate was split with RMI after the meeting.

We have no objection to RMI's proposal for preventing the leachate breakout. We appreciate RMI's concern for this situation and the precautions which



RMI Company Sodium Plant  
October 15, 1981  
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were taken to prevent surface water pollution. Our sample of leachate has been received by the Ohio Department of Health Laboratories for analysis. We will inform you of the results as soon as we receive them.

Sincerely,

*Melinda Merryfield-Becker*

Melinda Merryfield-Becker  
Solid Waste Scientist

MMB:mjo

cc: Ed Glod, C.O.  
Bill Skowronski, NEDO



# Ohio Department of Health

Industrial Chemistry Section

## Environmental Sample Submission Report

Agency: O EPA  
 Division Program: HM-50  
 Analysis Reported To: ☐ CO ☐ CDO ☐ SE  
☒ NE ☐ SW ☐ NW

Laboratory: ☐ Central ☐ SE ☐ NE ☐ SW ☐ NW  
 Sample Number: HM57  
 Analyst: E. Stafford Supervisor: J. Green  
 Date Received: 10/2/81  
 Date Reported: 10/6/81

### Sample Identification

Station: RMT  
 ID Number: SC  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ Zip: \_\_\_\_\_  
 County: Ashtabula Phone: \_\_\_\_\_  
 Collected By: Gary Gifford and Melinda Merryfield-Rode

Grab Sample Date or Beginning Date of Composite Sample—Use Military

Year	Month	Day	Hour	Minute
81	09	30	11	30

Ending Date of Composite Sample—Use Military Time

Year	Month	Day	Hour	Minute	CVT	S/T

### Field Treatment:

- ☐ Filtered ☐ CuSO<sub>4</sub> + H<sub>3</sub>PO<sub>4</sub>  
☒ Iced ☐ H<sub>2</sub>SO<sub>4</sub>  
☐ NaOH ☐ HNO<sub>3</sub>  
☐ Other (Explain)

### Additional Information—Analyst Remarks—Non Routine Analytical Requests

### Radioisotopes

<input type="checkbox"/> Alpha, Total pc/l	P1501
<input type="checkbox"/> Alpha, Diss pc/l	P1503
<input type="checkbox"/> Alpha, Suspd pc/l	P1505
<input type="checkbox"/> Beta, Total pc/l	P3501
<input type="checkbox"/> Beta, Diss pc/l	P3503
<input type="checkbox"/> Beta, Suspd pc/l	P3505
<input type="checkbox"/> Barium-140, Total pc/l	P3503
<input type="checkbox"/> Cesium-134, Total pc/l	P28414
<input type="checkbox"/> Cesium-137, Total pc/l	P28401
<input type="checkbox"/> Iodine-131, Total pc/l	P28301
<input type="checkbox"/> Potassium-40, Total pc/l	P15003
<input type="checkbox"/> Radium-226, Total pc/l	P9501
<input type="checkbox"/> Radium-228, Total pc/l	P11501
<input type="checkbox"/> Strontium-90, Total pc/l	P13501
<input type="checkbox"/> Strontium-89, Total pc/l	P15501
<input type="checkbox"/> Tritium pc/l	P7000

### Pesticides

<input type="checkbox"/> Aldrin, Whl Sampl ug/l	P39330
<input type="checkbox"/> DDD, Whl Sampl ug/l	P39360
<input type="checkbox"/> DDE, Whl Sampl ug/l	P39365
<input type="checkbox"/> DDT, Whl Sample ug/l	P39370
<input type="checkbox"/> Dieldrin, Whl Sampl ug/l	P39380
<input type="checkbox"/> Chlordane, Whl Sampl ug/l	P39350
<input type="checkbox"/> Endrin, Whl Sampl ug/l	P39390
<input type="checkbox"/> Heptachlor, Whl Sampl ug/l	P39410
<input type="checkbox"/> Hechir-Epoide, Whl Sampl ug/l	P39420
<input type="checkbox"/> Lindane, Whl Sampl ug/l	P39782
<input type="checkbox"/> Metoxychlor, Whl Sampl ug/l	P39480
<input type="checkbox"/> Malathion, Whl Sampl ug/l	P39530
<input type="checkbox"/> Parathion, Whl Sampl ug/l	P39540
<input type="checkbox"/> Methyl Parathn, Whl Sampl ug/l	P39600
<input type="checkbox"/> Toxaphene, Whl Sampl ug/l	P39400
<input type="checkbox"/> 2, 4-D, Whl Sampl ug/l	P39730
<input type="checkbox"/> Silvex, Whl Sampl ug/l	P39760
<input type="checkbox"/> BHC, Whl Sampl ug/l	P39340
<input type="checkbox"/> Mirex, Whl Sampl ug/l	P39755
<input type="checkbox"/> Drazinon, Whl Sampl ug/l	P39570

### Volatile Organics

<input type="checkbox"/> Chloroform, Total ug/l	P32106
<input type="checkbox"/> Methylene Chloride, Total ug/l	P34423
<input type="checkbox"/> Carbon Tetrachloride, Total ug/l	P32102
<input type="checkbox"/> Bromoform, Total ug/l	P32104
<input type="checkbox"/> Bromodichloromethane, Total ug/l	P32101
<input type="checkbox"/> Dibromochloromethane, Total ug/l	P32105
<input type="checkbox"/> 1, 2-Dichloroethane, Total ug/l	P32103
<input checked="" type="checkbox"/> Trichloroethylene	1.4% (w/v)
<input checked="" type="checkbox"/> Tetrachloroethylene	1.0% (w/v)
<input checked="" type="checkbox"/> Tetrachloroethane	29.3% (w/v)

### Special Parameters

<input type="checkbox"/> PCB, Whl Sampl ug/l	P39516
<input type="checkbox"/> Chlorophyll "A" ug/l	P32209
<input type="checkbox"/> Phenols ug/l	P32730
<input type="checkbox"/> Sample Purpose	P71999
<input type="checkbox"/> Sample Code	P115

Distribution: 1—Data Processing 2—Central Office 3—District Office 4—Owner 5—Laboratory